



IN THE CIRCUIT COURT
FOR THE THIRD JUDICIAL CIRCUIT
MADISON COUNTY, ILLINOIS

In Re: Asbestos Litigation
Cases Filed by Baron and Budd,
Plaintiffs,

No. 86-L-1351 - 86-L-1677
86-L-2704 - 86-L-2708
(Lead case: Greco)

v.

No. 86-L-905
(Lead case: Ahart)

A.P. Green, et al.,
Defendants.

No. 86-L-836
(Lead case: Abbott)

DEFENDANT COMBUSTION ENGINEERING, INC.'S
RESPONSES TO PLAINTIFFS' INTERROGATORIES

PRELIMINARY STATEMENT AND GENERAL OBJECTIONS

The answers of Defendant Combustion Engineering, Inc. (hereinafter "Combustion") to Plaintiffs' Interrogatories incorporate this Preliminary Statement and these General Objections.

Combustion began manufacturing asbestos-containing insulation products on June 5, 1963 and discontinued the manufacture of all such products on August 30, 1972. As a result, its answers to Plaintiffs' Interrogatories respond within that time frame. To the extent that these Interrogatories call for information or documents prior to this date, Combustion objects on the grounds that they are overly broad, unduly burdensome, and seek information neither relevant to the subject matter of this litigation, nor reasonably calculated to lead to the discovery of admissible evidence.

Combustion makes the following additional General Objections to each of Plaintiffs' Interrogatories:

1. This Defendant objects to these Interrogatories to the extent that they purport to require it to "identify" documents on the grounds that such request to "identify" are overly broad, unduly burdensome and oppressive.

2. This Defendant objects to these Interrogatories to the extent that information subject to the attorney/client privilege and/or which constitutes privileged attorney work product is sought.

3. This Defendant objects to the definitions provided with these Interrogatories as being overly broad, burdensome and not reasonably calculated to lead to the discovery of admissible evidence. This Defendant asserts that all terms should be given their usual and ordinary interpretation.

INTERROGATORIES

1. For each interrogatory below, please state the name and last known address of each person answering it, including whether he is employed by Defendant.

ANSWER: These interrogatories are being answered on behalf of this Defendant upon information and belief by Mr. Robert V. Valenza, General Manager, Engineered Systems & Services, C.E. Refractories, Combustion Engineering, Inc., Valley Forge, Pennsylvania.

2. Please state whether or not Defendant is a corporation. If so, please state your correct corporate name, the state of your incorporation, and the address of your principal place of business.

ANSWER: Combustion Engineering, Inc., is a Delaware Corporation having its principal place of business at 900 Longridge Road, Stamford, Connecticut.

3. Please describe Defendant's corporate history, including any mergers, consolidations, asset purchases, acquisitions or spinoffs.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is overly broad, unduly burdensome, and seeks information which is neither relevant to the subject matter of this case nor reasonably calculated to lead to the discovery of admissible evidence.

4. Please state whether or not the Defendant has purchased, assumed, or in any other manner acquired any of the assets and/or liabilities of any corporation or entity (such corporations or entities being limited to those engaged in the mining, selling, manufacturing, marketing or distribution of asbestos-containing products.) If so, please state the following:

- (a) the name of each such corporation or entity;
- (b) date of acquisition;
- (c) the nature of the company as it relates to asbestos.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is overly broad, unduly burdensome, and seeks information which is neither relevant to this action nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving this objection, this Defendant states:

On June 5, 1963, Combustion Engineering, Inc. acquired substantially all of the assets of a company previously known as Refractory & Insulation Corporation (a New Jersey corporation). This involved the acquisition of a refractory and insulation manufacturing plant in Port Kennedy, Pennsylvania.

On April 3, 1964, Combustion Engineering, Inc. purchased the assets of the Insulation Division of the M.H. Detrick Company (a Delaware corporation).

On March 27, 1969, Combustion Engineering, Inc. acquired Walsh Refractories Corporation (a Missouri corporation) by way of statutory merger. The principal business of Walsh was the manufacture and sale of non-asbestos-containing refractories, although it did manufacture four asbestos-containing products sold to a limited number of customers, primarily stove manufacturers in the St. Louis, Missouri area.

5. Has Defendant ever engaged in the mining, manufacturing, selling, marketing, or distribution of asbestos-containing products? If so, please state the following:

(a) the name of the company engaged in the activity (whether it is Defendant, Defendant's predecessor, or Defendant's subsidiary);

(b) as to each product mined, manufactured, sold, marketed, or distributed, please state the following:

(i) the trade or brand name;

(ii) its identification number (model, serial number, etc.);

(iii) the time period it was manufactured, mined, marketed, distributed or sold;

- (iv) its physical description including color, general composition, and form;
- (v) a detailed description of its intended use and purpose;
- (vi) a detailed description of the type package in which it was sold, listing the dates of each type of package used, a physical description of the package, and a description of any printed material or trademarks that appeared thereon;
- (vii) the percent of asbestos which it contained;
- (viii) the percent of asbestos by asbestos type (amosite, crocidolite, chrysotile, tremolite, anthophyllite);
- (c) the time period during which each of these products were on the market;
- (d) a description of the physical composition of each product;
- (e) how each of these asbestos-containing product can be distinguished from those of competitors;
- (f) a description of the physical appearance of such product;
- (g) a detailed description of the intended uses.

ANSWER: This Defendant never mined asbestos. It did manufacture, sell, market and distribute asbestos-containing products.

(a)-(c) See Exhibit A, attached hereto.

(d) This Defendant objects to this interrogatory on the grounds that the formulae for the chemical composition of its asbestos-containing products constitutes proprietary

information which Defendant should not be required to divulge. Without waiving this objection, see Exhibit A attached hereto for the percentages and types of asbestos for each asbestos-containing product.

- (e) This Defendant objects to this interrogatory on the grounds that it is vague, unduly burdensome, seeks protected attorney/work product and calls for speculation as well as an expert scientific opinion. Furthermore, this interrogatory requires this Defendant to be familiar with all products made by other manufacturers, which it is not.
- (f) For the most part, this Defendant's asbestos-containing insulation products were white or off-white in color. Also, see Exhibit A.
- (g) These products were intended to be used for thermal insulation.

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6. Before placing Defendant's asbestos-containing products on the market, did Defendant make or cause to be made, any studies to determine whether your products would be hazardous to people? If so, please state the date of said studies, what studies were done, and the titles of each study.

ANSWER: No.

7. Did any person prior to 1970 file a claim against any Worker's Compensation carrier covering Defendant alleging that he or she contracted a disease as a result of exposure to asbestos? If so, please state the following:

(a) a list of each such claim by claimant's name, date filed and jurisdiction involved;

(b) a brief summary of the disposition of each such claim.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is overly broad, unduly burdensome and seeks information which is neither relevant to the subject matter of this action nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving this objection, this Defendant states that the answer to this interrogatory is no.

8. Does Defendant or any of its subsidiary companies claim that any patent would cover any product listed above in answer to Interrogatory No. 5. If so, please state the following:

- (a) the date of each patent;
- (b) the date same was issued;
- (c) the number of each patent application that is pending.

ANSWER: No.

9. Have any of the products listed above in answer to Interrogatory No. 5 been altered in chemical composition since first being marketed? If so, please state the following:

- (a) the trade name of each such product;
- (b) the date each such product was altered;
- (c) the nature of the alteration;

(d) the reason for the alteration.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is overly broad, vague, unduly burdensome and seeks information which is neither relevant to the subject matter of this action nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving the aforesaid objection, this Defendant states that any changes that might have been made in the formula were made for the purpose of eliminating asbestos from the product. Asbestos was removed from all insulation products in 1972.

10. Have Defendant's asbestos-containing products ever been marketed, distributed, and/or sold by any other company or business? If so, please state the following:

(a) the name and address of each such company who may have distributed these products to locations listed on Exhibit 1;

(b) the name and address of Defendant's distributors in Missouri since 1920;

(c) the name and address of Defendant's distributors in Illinois since 1920;

(d) the date of each sale;

(e) the name of the person in each company with whom you primarily dealt;

(f) a list of all asbestos-containing products that you sold to that location from 1945 to 1980;

(g) the amount of each asbestos product sold to that location during this period of time;

(h) please identify all documents relating to this distributor for the particular location.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is overly broad, vague, unduly burdensome and seeks information which is neither relevant to the subject matter of this action nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving this objection, this Defendant states that the following companies may have distributed its asbestos-containing products in southern Illinois:

1. Refractories and Furnace Supply Company, St. Louis, Missouri.
2. Sid Harvey of Illinois Chicago, Illinois.
3. Illinois Insulation & Construction Company Chicago, Illinois.
4. Illinois Supply Company Aurora, Illinois.
5. Hi-Temp Refractories St. Louis, Missouri

This Defendant does not know to whom these distributors sold its asbestos-containing products.

11. Did Defendant or any of Defendant's distributors, as listed in Interrogatory No. 10, have sales representatives who specifically called on those facilities listed in Exhibit 1 from 1945 to 1975? If your response is yes, as to each facility, please state the following:

(a) the name and last known address of each such representative and whether they are still employed by Defendant;

- (b) the period of time they acted as your representative;
- (c) their general responsibility at this location;
- (d) Whether that person is still alive.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is overly broad, vague, unduly burdensome and seeks information which is neither relevant to the subject matter of this action nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving the afore-said objection, the following salesmen, who were employed by this defendant, may have called on facilities listed in Exhibit 1: Harry Franz, Roy Buckner, Andrew Kalin, William Schweckhardt, and Burt Wright. This Defendant does not know the salesmen for its distributors listed in Interrogatory No. 10.

12. Did Defendant ever have any division or subsidiary engaged in the contract business of applying asbestos-containing insulation? If so, please give the name of each subdivision, the full address of the home office and the date such subdivision or subsidiary was engaged in this contracting business.

ANSWER: This Defendant did not have such a contract division or subsidiary.

13. Did Defendant ever have any division or subsidiary engaged in the contract business of applying asbestos-containing refractory? If so, please give the name of each subdivision, the full address of the home office and the date such subdivision or subsidiary was engaged in this contracting business.

ANSWER: See answer to Interrogatory No. 12.

14. Please identify by location and product produced, each plant in which products listed in your answer to Interrogatory No. 5 have been manufactured and/or assembled and the dates said plants have been in operation.

ANSWER: Port Kennedy, Pennsylvania, June 5, 1963-1972; Aurora, Illinois, 1964-1972; St. Louis, Missouri, March 27, 1969-1972. For products produced in each of the above facilities, see Exhibit A, attached hereto.

15. Has Defendant, at any time, entered into a "rebranding" agreement with any other company, either as a buyer or a seller, concerning asbestos insulation or refractory materials? If so, please state:

(a) the name of the company manufacturing the asbestos products under such agreement;

(b) the trade name affixed to such products;

(c) the periods of time covered by each such agreement;

(d) the volume (in dollar amounts) of each such transaction;

(e) the purchaser of such products.

(f) Does Defendant currently have in its possession any of the writings or contracts concerning such rebranding agreement?

ANSWER: This Defendant objects to this interrogatory on the grounds that it is vague, overly broad, unduly burdensome and seeks information which is neither relevant to the subject matter of this action nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving this objection, this Defendant states that it sold Griptex Block, Super 711 Insulating Cement, and Utility Thermal Finish Cement from 1963 to 1971 to Kaiser Refractories for resale under Kaiser's name.

Further, this Defendant purchased two products from Flintkote known as Thermalkote and Trowel Mastic, and these products were re-labeled and re-sold by this Defendant under the names Weatherkote and Aircheck, respectively.

This defendant does not have in its possession any written rebranding agreements.

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16. What is the name, address, and job title of each individual who participated in the design and preparation of manufacturing specifications for each such product listed above in answer to Interrogatory No. 5?

ANSWER: To the best of this Defendant's knowledge, the following persons may have been involved with the design and preparation of the manufacturing specifications: Horace N. Clark (now deceased); Alva S. Arwine (now deceased); Robert E. Nelson (now retired).

17. As to each product listed in response to Interrogatory No. 5, please describe how each product was to be cut, shaped, scribed, mixed and applied on the job. (In answering this

question, give particular reference as to whether or not the materials were to be sawed or cut on the job, blown into confined areas, mixed with water in a cement or paste.)

ANSWER: For the particular uses of each of this Defendant's asbestos-containing products, see Exhibit A, attached hereto. Actual use was left to customer practice, to which this Defendant cannot attest.

18. Based upon the material contents of your asbestos-containing products, the method of manufacturing, and the method of application, please state which products listed in Interrogatory No. 5 could be applied by a worker without creating dust.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is vague and overly broad, and calls for speculation, as well as a specific opinion.

19. Do any written memoranda, specifications, blueprints or other written materials of any kind or character now exist relating to the design and preparation of the products listed in answer to Interrogatory No. 5? If so, please:

- (a) list each such written material or document;
- (b) identify the person or persons presently in possession of each such document;
- (c) state where each such document is located.

ANSWER: None, other than a limited number of quality control records which are in the custody of Mr. Albert Momme in Valley Forge, Pennsylvania.

20. Prior to releasing the products listed in Interrogatory No. 5 to the public for sale, were any tests (animal or human test) conducted on same to determine potential health hazards involved in the use of materials contained therein? If so, please state:

(a) the name, address, and job classification of each individual who conducted such tests;

(b) the results of such tests.

ANSWER: No.

21. Does Defendant have or control any written memoranda, specifications, blueprints or other written materials of any kind or character relating to the testing of said products? If so, please:

(a) list each such written material or document;

(b) identify each person who presently has possession of each such document;

(c) state where each such document is located.

ANSWER: No.

22. Were any design changes made as a result of such tests?
If so, please state:

- (a) the nature of the change made;
- (b) the name, address, and job classification of each person in charge of making a change.

ANSWER: Not applicable.

23. After releasing the products listed in answer to Interrogatory No. 5 to the public, did Defendant conduct any tests (list animal and human tests) conducted thereon to determine potential health hazards involved in the use of materials contained therein? If so, please state:

- (a) the name, address, and job classification of each person and/or agency conducting said tests;
- (b) the results of said tests;
- (c) the date of said tests.

ANSWER: No.

24. Has Defendant ever conducted any studies concerning the effects of the inhalation of asbestos dust or fibers on one using or being exposed to any of the asbestos material manufactured,

sold or distributed by you or your predecessor? If yes, please give dates and nature of such studies, names and addresses of persons conducting such studies, the purpose of such studies, and attach a copy of reports based upon such studies, and list to whom such reports were given and the date.

ANSWER: No.

25. Please state whether or not Defendant ever conducted any tests in the field (where asbestos-containing products were applied, removed or used) to determine the nature and extent of asbestos fiber exposure to insulators, applicators, or fellow employees in the vicinity thereof? If so, please identify:

- (a) the date, place and nature of each and every test;
- (b) the particular asbestos-containing products to which each test applied;
- (c) the results of each test with particular reference to the number of asbestos fibers per cubic centimeter of air found at each site.

ANSWER: No.

26. Please state whether or not Defendant ever obtained any knowledge concerning the likelihood of asbestos being hazardous to human health. If so, please state:

(a) when Defendant first became aware of the hazardous potential of asbestos dust and asbestos fibers;

(b) the manner in which the Defendant, Defendant's predecessor, or Defendant's subsidiary companies first obtained this knowledge and became aware of said hazards and from what source this information was obtained.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is vague, and further on the grounds that it calls for a medical or scientific opinion. Without waiving this objection, this Defendant states that it has no records or other information regarding precisely how or when it first became aware of the alleged health hazards associated with the use and/or fabrication of asbestos-containing products. Nonetheless, this Defendant had become aware by 1969 when it began to use warning labels.

27. Please state when Defendant first acquired knowledge concerning the association between inhalation of asbestos fibers and the contraction of cancer including, but not limited to, mesothelioma and state the source of that information, including a description of all tests conducted relative to the possibility of such a relationship.

ANSWER: See response to Interrogatory No. 26.

28. Please state when Defendant first acquired knowledge concerning the association between the inhalation of asbestos

fibers and contraction of lung disease known as asbestosis and state the source of that information including a description of all tests conducted relative to the possibility of such a relationship.

ANSWER: See response to Interrogatory No. 26.

29. Please identify all physicians, industrial hygienists, and other employees (including their names and addresses) who were employed, retained or otherwise engaged by Defendant for research, investigation or study concerning asbestos or asbestos-related diseases.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is overly broad, unduly burdensome and seeks information which is neither relevant to the subject matter of this action nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving this objection, this Defendant states that during the time that it manufactured asbestos-containing insulation products, it only employed physicians to conduct routine physical examinations and to handle emergencies. To the best of this Defendant's knowledge, these physicians rendered no advice relative to asbestos.

30. As to each person who acted in a medical advisory capacity (as it relates in any way to asbestos) to Defendant, please list their name, the date individual acted in this capacity, and that person's current address and job title.

ANSWER: See answer to Interrogatory No. 29.

31. Please state if any medical officer or industrial hygienists or medical consultant ever made at any time any recommendations and/or suggestions to Defendant pertaining to the risks or hazards to persons involved in the manufacture or use of asbestos products and, if so, please state when, by whom and to who such recommendations and/or suggestions were made and the substance of each recommendation.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is overly broad, unduly burdensome and seeks information which is neither relevant to the subject matter of this action nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving this objection, this Defendant states that the industrial hygienists employed by this Defendant were hired to comply with the regulations of the Atomic Energy Commission. These hygienists gave no advice relative to asbestos.

32. Please state the scientific or medical periodicals to which Defendant, its medical department, industrial hygiene divisions or consulting physicians subscribed between 1945 and 1975.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is vague, overly broad, unduly burdensome and seeks information which is neither relevant to the subject matter of this action nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving this

objection, this Defendant states that during the time that it manufactured asbestos-containing insulation products, this Defendant did not maintain a medical library.

33. State in detail what test, if any, Defendant ever made with regard to the quantity, quality, or threshold limit values of asbestos dust or particles to which applicators or consumers of your product were exposed while using our asbestos-containing products.

ANSWER: None.

34. For each test described in Interrogatory No. 33, please give the name of the person conducting the test, the date of the test, and attach true copies of any reports, findings or memoranda concerning such tests or studies.

ANSWER: Not applicable.

35. Please state the year that Defendant was first advised of either threshold limit values or maximum allowable concentrations of both asbestos dust and total dust by the American Conference of Governmental Industrial Hygienists and state the name of the employee/official of the company receiving such advice.

ANSWER: This Defendant was aware, prior to 1972, of the threshold limit values established by the American Conference of Governmental and Industrial Hygienists. However, it does not know specifically when or how it acquired such knowledge.

36. Does Defendant maintain a library dealing with industrial hygiene, medicine, safety and engineering? If so, state:

- (a) the date each such library was established;
- (b) the location of each library;
- (c) the name(s) of the librarian(s) since 1930;
- (d) list all journals subscribed to by you concerning asbestos, industrial hygiene, medicine, safety, and/or engineering;
- (e) list all books and articles dealing with asbestos and asbestos-related diseases and the date acquired.

ANSWER: See response to Interrogatory No. 32.

37. Did Defendant in the 1920's or 1930's commission, or participate in the arrangements with Metropolitan Life Insurance Company for studies at the Trudeau Foundation at Saranac Lake, New York, concerning the effect of inhalation or ingestion of asbestos fibers upon human and/or animal bodies.

ANSWER: No.

38. Does Defendant admit that a report of some of the studies of Trudeau Foundation at Saranac Lake, New York, entitled "Effects of the Inhalation of Asbestos Dust in the Lungs of Asbestos Workers" was published by A. J. Lanza, assistant medical director and J. published in the Public Health Report, Vol. 50, no. 1, dated January 4, 1935?

ANSWER: This Defendant objects to the form of this interrogatory and states that any knowledge it might have in this regard would have been obtained in the course of asbestos-related litigation and would therefore constitute attorney/work product.

39. When was Defendant first aware of the above-mentioned Lanza report?

ANSWER: See answer to Interrogatory No. 38.

40. Please state whether the Defendant at any time have been members of any "trade organization" or "trade association" composed of other manufacturers, miners, distributors and/or sellers of asbestos products and, if so, please identify the name and address of each such association or organization, the dates of membership, and the names of any publications issued or written by such association or organization.

ANSWER: No.

41. With respect to each trade organization or association listed in answer to Interrogatory No. 40, please state whether the minutes of the group's meetings and any correspondence between the members of such groups concerning the hazards of asbestos exposure are available.

ANSWER: Not applicable.

42. Please identify by name the technical and trade association periodicals to which the Defendant subscribed, and state whether defendant had knowledge of any articles being printed, or withheld from printing, in said periodicals pertaining to the hazardous potential of asbestos. If so, please state the following:

- (a) the title of each such article;
- (b) the periodical in which each such article was published;
- (c) the date each such article was published;
- (d) a detailed explanation of the reason for withholding any such article for printing.
- (e) Produce documentation which refers, alludes or mentions articles which were withheld for publication. (See Request for Production No. 18.)

ANSWER: This Defendant objects to this interrogatory on the grounds that it is overly broad, unduly burdensome and seeks information which is neither relevant to the subject matter of this action nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving this objection, this Defendant states that it subscribed to no such periodicals relevant to asbestos.

43. Please state whether, prior to 1975, the Defendant sponsored, or attended any meeting, seminar, conference, convention or legislative hearing where the subject of occupational health and exposure to asbestos was discussed and, if so, please state the date and place of such meeting and the name and address of any speakers or participants.

ANSWER: To the best of this Defendant's knowledge, no.

44. As to each product listed in response to Interrogatory No. 5, please state whether Defendant, at any time, published and/or distributed any brochures, pamphlets, packagings or other written materials of any kind or character that contain any warnings, cautions, caveats or directions concerning the possible health effects of the product on a person. If so, please state as to each product:

- (a) the wording of each such warning;
- (b) a description of each such printed material;

- (c) the method used to distribute the warning to persons who are likely to use the products;
- (d) the date each such warning was issued;
- (e) whether any warning accompanied any of your asbestos-containing products sales literature, handout or pamphlets;
- (f) please attach a copy of the warning and date said warning was issued;
- (g) the name, address, and job classification of each person who presently has possession of the above-described documents;
- (h) the name or names and addresses of the company who provided, produced, or manufactured the boxes or containers on which the warning appeared and dates these boxes with the warnings appeared.

ANSWER: Yes.

- (a)-(b) See Exhibit B, attached hereto.
- (c) A copy of the warning was placed on each package of this Defendant's asbestos-containing products beginning in 1969.
- (d) Beginning in 1969, until this Defendant discontinued the manufacture of such products.
- (e) None, other than the warning label attached hereto as Exhibit B.
- (f) See Exhibit B, attached hereto.
- (g) The original of the only extant warning label is in the possession of Robert B. Preston, 1100 Huntington Building, Cleveland, Ohio 44115, one of the attorneys for this Defendant.
- (h) Unknown.

45. Has sales materials been prepared by Defendant or its agents for purposes of marketing or advertising the asbestos products listed in answer to Interrogatory No. 5? If so, please state:

(a) the name and address of each person or entity who prepared same;

(b) the name, address and job title of each person who presently has possession of same;

(c) the date same was prepared;

(d) the media used to disseminate the sales material.

ANSWER: This Defendant did not advertise its asbestos-containing insulation products.

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46. Has any written material of any kind or character been prepared by Defendant, Defendant's predecessor or any of Defendant's subsidiary companies or their agents indicating how the products listed in answer to Interrogatory No. 5 should be used or maintained by the ultimate consumer. If so, please state the following:

(a) the name, address, and job classification of each person who prepared same;

(b) the name, address, and job classification of each person who presently has possession of same;

(c) the dates and manner in which said material was distributed to purchasers of the products in answer to Interrogatory No. 5..

ANSWER: This Defendant states that the actual use of this Defendant's asbestos-containing products was left to industry practice. This Defendant did occasionally distribute technical information materials to its distributors. Defendant prepared a booklet in 1970 and also has some incomplete material prepared in 1964. To the best of this Defendant's knowledge, the information contained in these materials was prepared by Donald Peterson, formally the Administrative Assistant to the Vice President of Sales, and Kenneth Cohen, formally Office Manager of the Sales Department. Copies of such extant materials are attached as Exhibit C.

47. Was any written material of any kind prepared by Defendant and distributed to those entities listed in response to Interrogatory No. 11? If so, please state the following:

- (a) identify the written material by content and date;
- (b) to whom was it delivered.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is vague, overly broad, unduly burdensome and seeks information which is neither relevant to the subject matter of this action nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving the aforesaid objection, this Defendant states that the materials attached as Exhibit C may have been distributed to those entities listed in response to Interrogatory No. 11.

48. Does Defendant contend that asbestos-containing products can be manufactured so as to eliminate all potential health hazards to workers installing same? If so, please state the following:

(a) the date that Defendant first determined that another product could be used in place of asbestos;

(b) the chemical of the substitute;

(c) whether the substitute is suitable for the purpose for which they are to be used;

(d) whether Defendant used the substitute for asbestos to 1971;

(e) whether Defendant ever used the substitute for asbestos for high or low heat insulation.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is vague, unduly burdensome and calls for speculation as well as a medical or scientific opinion.

49. Did Defendant receive notice prior to 1968 that any person was claiming injury as a result of using asbestos products manufactured and/or sold by Defendant? If so, please state:

(a) the name and address of each claimant;

(b) the date of notice of each claim;

(c) a description of the claim;

(d) the type of injuries allegedly sustained;

(e) the name and address of each attorney representing the individuals making such claims;

- (f) the style and court number of each such claim; .
- (g) the resolution of each claim.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is vague, overly broad and seeks information which is neither relevant to the subject matter of this action nor reasonably calculated to lead to the discovery of admissible evidence.

50. Has Defendant obtained statements from any witnesses including the Plaintiff? If so, please:

(a) list each witness who has given a statement and the name, address, and job title of each person having custody of any such statement.

ANSWER: This Defendant objects to this interrogatory in that it seeks information protected by the attorney work product privilege.

51. As to each Plaintiff, do you contend that any Plaintiff improperly used your products? If so, please set out in detail as to each Plaintiff in what respect the product was improperly used.

ANSWER: It has not been determined that each Plaintiff was exposed to asbestos-containing products manufactured by this Defendant. Discovery continues. When discovery is completed, all proper contentions will be made.

52. As to each facility listed on Exhibit 1, and as to each Plaintiff, please state whether Defendant contends that there was any substance other than asbestos, including but not limited to, those items listed in Interrogatory No. 51 or Interrogatory No. 52 of Defendant's Master Set of Interrogatories to Plaintiff, which contributed or caused Plaintiff's injuries. If your answer is yes, please state the following:

- (a) the facts upon which you rely;
- (b) the identity of the sources upon which you rely which substantiate these facts.

ANSWER: Discovery is ongoing. When discovery is completed, all proper contentions will be made.

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53. Would any respirator, mask or other breathing devices prevent inhalation of the asbestos dust and fibers contained in the products listed in answer to Interrogatory No. 5? If so, state:

- (a) when the respirator was sold;
- (b) a detailed description of such respirator or other breathing devices, including name of manufacturer and model number;
- (c) the basis of your claim that such respirators or other breathing devices will prevent the inhalation of such dust and fibers;

(d) identify any tests performed regarding the effectiveness of such respirators and other breathing devices in preventing the inhalation of asbestos dust and fibers including date, title, author and number.

(e) Produce all documentation which mentions, alludes or refers to tests performed on breathing devices which prevented the inhalation of asbestos dust and/or fibers.

ANSWER: This Defendant objects to this interrogatory on the grounds that it improperly assumes objectionable facts and further on the grounds that it seeks a scientific and/or medical opinion.

54. Does Defendant expect to call expert witnesses at the trial of this case? If so, please state the following:

- (a) their identity, last known address;
- (b) the subject matter on which the expert is expected to testify;
- (c) the expert's specific conclusion and specific opinions and the specific basis therefore;
- (d) the expert's qualifications to render the opinions set forth above.

ANSWER: Discovery in this matter is ongoing. Therefore, this Defendant is unable to identify its witnesses at this time, but will timely identify its witnesses prior to trial and pursuant to any discovery schedule ordered by this Court.

55. For each expert witness who has testified for Defendant in other asbestos cases (both by deposition and trial testimony), please state:

- (a) the person's name and last known address;
- (b) the style of the case, its cause number, and its jurisdiction;
- (c) whether that person was an employee of Defendant at the time and whether that person remains an employee.

ANSWER: This Defendant objects to this interrogatory on the grounds that it is overly broad, unduly burdensome and seeks information which is neither relevant to the subject matter of this case nor reasonably calculated to lead to the discovery of admissible evidence.

56. Please identify each expert witness who is not retained or employed for that purpose who is an employee of Defendant and will render an opinion within his expertise at the time of trial.

- (a) Please identify each document which will be offered into evidence by the expert witness.

ANSWER: Discovery in this matter is ongoing. Therefore, this Defendant is unable to identify its witnesses at this time, but will timely identify its witnesses prior to trial and pursuant to any discovery schedule ordered by this Court.

57. Does Defendant admit that service of process was properly had on you in this case? If not, please state why.

ANSWER: Yes.

58. Does Defendant have policies of insurance that might cover the claims that have been made by Plaintiff herein?

ANSWER: This Defendant objects to this interrogatory on the grounds that it is overly broad, unduly burdensome and seeks information which is neither relevant to the subject matter of this action nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving this objection, this Defendant states that during the time that it manufactured asbestos-containing insulation products, i.e., from mid-1963 to 1972 it carried insurance with The Travelers Insurance Company, Hartford, Connecticut, primary policy \$500,000; umbrella policy, \$5,000,000; plus various layers of excess insurance all subject to varying deductibles depending upon the year of coverage and subject to the terms, limitations and conditions of the respective policies.

59. Please state the name and address of each person who has knowledge of relevant facts regarding claims and defenses of this lawsuit.

ANSWER: Discovery in this matter is ongoing. Therefore, this Defendant is unable to identify its witnesses at this time, but will timely identify its witnesses prior to trial and pursuant to any discovery schedule ordered by this Court.

EXHIBIT 1

1. American Steel, Granite City, Illinois
2. Amoco Refinery, Wood River, Illinois
3. Apex Oil Refinery, Hartford, Illinois
4. Central Illinois Power Service (Coffeen Powerhouse)
5. Central Illinois Power Service (Meredosia Powerhouse)
6. Central Illinois Power Service (Baldwin Powerhouse)
7. Central Illinois Power Service (Pearle Powerhouse)
8. Central Illinois Power Service (Marion Powerhouse)
9. Central Illinois Power Service (Newton Powerhouse)
10. Cerro Copper, Granite City, Illinois
11. Clark Oil Company Refinery, Wood River, Illinois
12. Colsolidated Aluminum Company, Granite City, Illinois
13. Commonwealth Edison: -
 72 W. Adams
 Chicago, IL 60690
 - A. Alton Powerhouse
 Alton, Illinois
 - B. Baldwin Powerhouse
 Baldwin, Illinois
 - C. Braidwood Station #20
 East of Route 53, 1-1/2 miles South of Route 113
 Braidwood, Illinois 60408
 - D. Byron Station #6
 4450 North German Church Road
 Byron, Illinois 61010
 - E. Chicago Powerhouse
 Chicago, Illinois
 - F. Clinton Nuclear Powerhouse
 Clinton, Illinois
 - G. Coffeen Powerhouse
 Coffeen, Illinois

- H. Collins Station #23
N. Side Pinebluff Road, 4 miles East of Route 47
Morris, Illinois 60450
- I. Cordoba Powerhouse
- J. Crawford Station #13
3501 Pulaski Road
Chicago, Illinois 60623
- K. Dresden Station #12
Lorenzo Road, 4 miles West of I-55
Morris, Illinois 60450
- L. E. St. Louis Powerhouse
- M. Fisk Station #11
1111 West Cermak Road
Chicago, Illinois 60608
- N. General Steel Industries
- O. Granite City Powerhouse
- P. Granite City Plant
- Q. Granite City Foundry
- R. Joliet Station #9
Patterson Road, 1 mile West of Brandon Road
Joliet, Illinois 60436
- S. Joliet-Rockdale Station #29
U.S. Route 6 and Larkin
Joliet, Illinois 60436
- T. Joppa Powerhouse
- U. Kincaid Station #21
4 miles West of Kincaid on Route 104
Kincaid, Illinois 62540
- V. LaSalle Station #1
Grand Ridge Road, 3 miles West of Route 170
Seneca, Illinois 61360
- W. Manitou Powerhouse
- X. Meredosia Powerhouse
Meredosia, Illinois
- Y. Morris, Illinois Atomic Powerhouse
Morris, Illinois

- Z. Powerton Station #3
2 miles South of Pekin, off Route 29 on Manito Road
Pekin, Illinois 61554
- AA. Quad-Cities Station #4
22710 - 206th Avenue North
Cordova, Illinois 61242
- BB. State Line Station #7
103rd Street and Lake Michigan
Hammond, Indiana 46326
- CC. St. Louis Powerhouse
- DD. Waukegan Station #16
10 Greenwood Avenue
Waukegan, Illinois 60087
- EE. Will County Station #18
529 East Romeo Road
Romeoville, Illinois 60441
- FF. Wood River Powerhouse
- GG. Zion Station #22
101 Shiloh Boulevard
Zion, Illinois 60099
- 14. Granite City Steel, Granite City, Illinois
- 15. Illinois Power, Decatur, Illinois
 - A. Belleville Powerhouse
 - B. Baldwin Powerhouse
 - C. Alton Powerhouse
 - D. Belleville Substation
 - E. Cahokia Powerhouse
 - F. Clinton Powerhouse
 - G. Coffeen Powerhouse
 - H. Decatur Powerhouse
 - I. E. Alton Powerhouse
 - J. Fairmont City Powerhouse
 - K. Freeburg Powerhouse
 - L. Granite City Powerhouse

- M. Hayanna Powerhouse
- N. Joppa Powerhouse
- O. Kilngas Power Plant
- P. Kincaid Powerhouse
- Q. Madison Powerhouse
- R. Maridosa Powerhouse
- S. Marion/Wood River Powerhouse
- T. Mascoutah Powerhouse
- U. Newton Powerhouse
- V. REA Powerhouse
- W. S.E. Marion Powerhouse
- X. Scott Air Force Base
- Y. Scottfield Powerhouse
- Z. Springfield Powerhouse
- AA. St. Louis Powerhouse
- BB. Tilden Powerhouse
- CC. Union Electric Powerhouse
- DD. Venice Powerhouse
- EE. Wood River Powerhouse
- 16. Grant Fork Powerhouse
- 17. Portage Des Sioux Powerhouse
- 18. Laclede Steel Company, Alton, Illinois
- 19. Marathon Oil Refinery, Robinson, Illinois
- 20. Monsanto, Sauget, Illinois
- 21. Olin Corporation, East Alton, Illinois
- 22. Owens-Illinois Glass Co., Alton, Illinois
- 23. Shell Oil Refinery, Roxana, Illinois
- 24. Sinclair Oil Refinery, Hartford, Illinois
- 25. Texaco Oil Company Refinery, Lawrenceville, Illinois

STATE OF PENNSYLVANIA)
)SS
COUNTY OF MONTGOMERY)

ROBERT V. VALENZA, being first duly sworn on oath deposes and says that he is General Manager, Engineered Systems And Services, C-E Refractories, Combustion Engineering, Inc.; that he has read the above and foregoing Answers to Interrogatories by him subscribed, and that the same are true and correct.

Robert V. Valenza
ROBERT V. VALENZA

SUBSCRIBED AND SWORN TO
before me this 13
day of June, 1988.

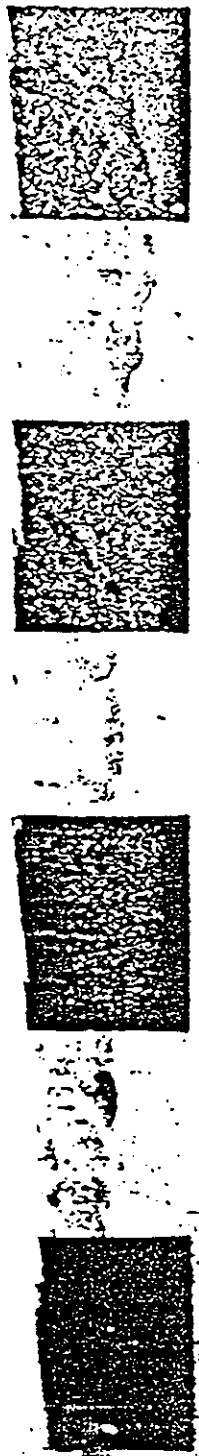
Earl O. DiJenno, Jr.
NOTARY PUBLIC

EARL O. DIJENNO, JR., Notary Public
Plymouth Twp., Montgomery Co.
My Commission Expires Nov. 20, 1988

EXHIBIT A

<u>INSULATING BLOCK</u>	<u>C-E START</u>	<u>ESTIMATED STOP</u>	<u>PERCENT AND TYPE OF ASBESTOS</u>	<u>CONTAINER</u>	
Insulating Block (R)	1963	1966	6.2(A)	Cardboard Carton	
Insulating Block (R)	1963	1966	4.6(A)	Cardboard Carton	<u>NER</u>
Optex* Mineral Wool Block (R)	1964	1972	2.0(C)	Cardboard Carton	s
Kaiser M. Block (D)	Unknown	1971	2.0(C)	Cardboard Carton	s
<u>INSULATING CEMENTS</u>					
Stic-tite* (R)-(D)	1963	8/30/72	38.6-42.2(C)	50 lb. bags	
Super Stic-tite (R)-(D)	1963	8/30/72	9.89-10.2(C)	50 lb. bags	
Super Finish Stic-tite (R)	1963	6/27/72	11.5-13.1(C)	50 lb. bags	ners
Super Finish (R)	8/10/65	1/10/68	14.2(C)	40 lb. bags	11.
Super 711 (D)	1964	6/27/72	13.7(C)	50 lb. bags	ers
Kaiser Plastic Insulation (D)	1964	1971	13.7(C)	50 lb. bags	1.
Utility Thermal Finish Cement (D)	1964	2/28/72	5.0(C)	50 lb. bags	ers
Kaiser Hard Top (D)	1964	2/28/72	5.0(C)	50 lb. bags	rs
Casing Cement (D)	1964	1969	5.0(C)	50 lb. bags	.
MHD Finishing Cement (D)	1964	1968	68.03(C)	50 lb. bags	rs
Pyroscat* Fireproofing Cement (D)	1964	6/8/72	3.0(C)	50 lb. bags	
Hillite Insulating Cement (D)	1964	1968	9.1(C)	50 lb. bags	

EXHIBIT B



CAUTION: This product contains asbestos. Inhalation of asbestos may be harmful. If contact is not possible, wear respirators approved by the National Institute for Occupational Safety and Health (NIOSH).

EXHIBIT C

INDUSTRIAL INSULATIONS

TECHNICAL DATA



REFRACTORIES

A DIVISION OF COMBUSTION ENGINEERING, INC.

ASBESTOS ROPE

500° ROPE IS A COMMERCIAL GRADE, WHITE CHRYSOTILE ASBESTOS FIBER.

1000° ROPE IS A PURE 98/100% WHITE CHRYSOTILE ASBESTOS FIBER.

APPLICATIONS OF C-E ASBESTOS ROPE . . HERE ARE SOME OF THE MANY SERVICES

STEEL MILLS AND FOUNDRIES

Uses for C-E Asbestos Rope are almost endless. Sealing molds, vacuum-pouring equipment (where leakage can ruin an entire billet), sand molds off from pouring ladles, calking joints in large cores which must be segmented.

ATOMIC ENERGY

1000° is standard in the Industry because it withstands an integrated neutron flux of 10^{19} NTV units.

MARINE SERVICE

C-E Asbestos Rope is essential in the Engine Room for general boiler service such as calking, filling and expansion joints, wrapping hard-to-reach steam lines and in emergencies, for quick repair of damaged steam lines.

GENERAL INDUSTRY

Anywhere heat sealing is required, whether heat-treating furnaces, boilers or processing operations.

POWER PLANTS

Between boiler walls and brick-work to allow for expansion and contraction, wrapping steam and exhaust lines where space limitations preclude formed insulation, covering small ducts, calking hard-to-reach spaces, insulating hot pipes passing through fire-walls and bulkheads. It is the standard for use in grooves for door sealing, between boiler sections, expansion joints and in handling hot gases.

ASBESTOS ROPE CAN HANDLE EFFICIENTLY AND ECONOMICALLY

CHEMICAL INDUSTRIES

C-E 1000° rope is successfully used as calking rope for bell and spigot joints in chemical lines. Because it contains no organic components, it is used as yarning rope for water lines. In addition to its heat-resistance, the chemically inert characteristics have made it a "standard" in other chemical-handling operations such as packing for carboy-stoppers, and in Cryogenic services, and other applications where this property is required.

ALUMINUM PLANTS

Anywhere the control of heat and sealing is needed—heat-treating ovens, grooves for door sealing, pouring ladles, vacuum seals on crucibles, and in many other dry heat-sealing applications, C-E Rope is recommended.



A DIVISION OF COMBUSTION ENGINEERING, INC.

Technical Bulletin

GRIPTEX BLOCK INSULATION

Griptex* is a major development in insulation offering a unique combination of characteristics. Special mineral fibers combined with high temperature bonding materials, provide practical advantages. The embossed hard finish surface provides superior handling strength and stronger adhesion of cement finishes. The combination of flexibility and high strength make impaling over welded pins easy, without pre-drilling. The neutral PH of Griptex Block assures against corrosive action. This particularly is important when used in conjunction with aluminum jacketing.

Hydraulic setting cements and castable refractories may be applied directly to Griptex Block without premature loss of mixing water needed for proper hydration.

EFFICIENT

The felted fiber core of Griptex Block offers the maximum buffering action against heat penetration up to 1800°F. The thermal conductivity at 200°F. means temperature is .37 BTU; at 600°F. it is .49 BTU.

APPLICATION METHODS

Griptex may be simply impaled over standard welded pins and secured with speed clips or may be secured in place with metal bands. A sharp knife is the only tool needed to fabricate Griptex to fit irregular shaped equipment. Simply press over bolt heads and projections without additional cutting. Outdoor applications should be weatherproofed.

RECOMMENDED USES

BOILERS

Drums
Headers
Walls
Economizers
Air Preheaters

FURNACES

Heating
Heat Treating
Forging
Annealing
Normalizing

OVENS, KILNS & DRYERS

FIREPROOFING
TANKS & VESSELS

TURBINES & PUMPS

FAN HOUSING
DUCTS & BREECHINGS

SPECIFICATION REFERENCES

High Temperature mineral fiber block insulation shall be GRIPTEX complying with the performance requirements of ASTM C-392, Class 2; Federal Specification HH-1-564 and/or Commercial Standard CS-117 of the U. S. Department of Commerce.

*A C-E trade name.

A SMOOTH, ONE-COAT PLASTIC FINISH INSULATION

Super Finish Stic-Tite provides a *smooth*, hard, fibrous finish covering for insulating blankets, block, standard Stic-Tite and other insulations. It is a dry, finely ground, pure white mixture of high quality mineral wool and diatomaceous earth which, when mixed with the proper amount of water, is ready for instant use. Like standard Stic-Tite, it forms a spongy mass of dead air cells which stops air infiltration and resultant heat loss.

NO ROUGHING COAT—FINISHES SMOOTH

Super Finish Stic-Tite is applied in a single coat. *It can be troweled very smooth* for pleasing white appearance. No roughing coat is needed, thereby saving materials and labor. It does not shrink or crack. There is no pointing up or patching necessary after Super Finish Stic-Tite has dried.

USE SUPER FINISH STIC-TITE

WHEN a *perfectly smooth, one-coat* plastic finish insulation is specified for temperatures up to 1700°F.

WHEN necessary to cover blankets, block or standard Stic-Tite in order to provide a *smooth, hard, white* surface.

DOESN'T COME OFF

Super Finish Stic-Tite adheres strongly to overhead, vertical and curved surfaces and rounded corners. Once it has dried, the bond is unaffected by vibration, impact or moisture.

CAN BE APPLIED ON COLD OR HOT SURFACES

Because it doesn't shrink during drying, Super Finish Stic-Tite can be applied directly to cold or hot metal or brick surfaces up to 175°F. It dries hard, without shrinking, in about 2 hours. When applied to hotter surfaces, a rough coat of standard Stic-Tite is recommended.

GOES A LONG WAY

Super Finish Stic-Tite gives excellent coverage. One hundred pounds cover an 80 sq. ft. surface with a 1/2" thick layer; 120 sq. ft. with a 3/8" thick layer; or 160 sq. ft. with a 1/4" thick layer. This is by far the lowest cost coverage of any other one-coat finish insulation available.

HOW TO APPLY SUPER FINISH STIC-TITE

1. Mix Super Finish Stic-Tite thoroughly with 5 to 6 gals. fresh water per 25 lb. bag.
2. Allow the cement mix to soak for one-half hour before using to insure maximum workability.
3. Mix no more than will be applied in 4 hours.
4. If any of the batch has dried out, do not remix it with water or fresh, dry material as the resultant finish will not be hard. Use only fresh batches.
5. For smoothest finish, trowel the cement to at least 3/8" thickness.
6. Where used as a finish coat over an insulating cement roughing coat, be sure the undercoat has set overnight before applying Super Finish Stic-Tite.
7. Where a given area cannot be finished in a continuous application, the joints should be feather-edged.

SUPER 711 INSULATING CEMENT

SUPER 711 Insulating Cement is a mixture of high temperature mineral fibers specially processed into resilient wool nodules, combined with asbestos and suitable binders to form a high temperature plastic insulation. Water added according to directions gives a trowelable consistency that is ready for application on equipment to be operated at temperatures up to 1800°F.

WIDE USAGE

SUPER 711 is a versatile material for many types of insulation requirements. Applied over block or blanket insulations, it fills open joints and provides a monolithic surface for whatever type of subsequent finish is specified. Its plastic flexibility permits application directly to regular or curved surfaces -- such as valves, fittings, tanks and vessels.

EASY TO APPLY

SUPER 711 has excellent adhesive qualities. Its increased stickability means a better job in less time, from wet to dry. Will not slip or roll under trowel application and may be easily gun applied. This superior workability is a result of fine mineral nodules, special manufacturing methods and quality control.

MAXIMUM COVERAGE - LOW SHRINKAGE

SUPER 711 Insulating Cement assures maximum coverage and low shrinkage. The resilient nodules of mineral fiber do not collapse when mixed with water. See table of Physical Properties for coverage.

RECOMMENDED USES

BOILERS

Drums
Headers
Walls
Economizers
Air Preheaters

OVENS, KILNS & DRYERS
VALVES & FITTINGS
TANKS & VESSELS

FURNACES

Heating
Heat Treating
Forging
Annealing
Normalizing

TURBINES & PUMPS
FAN HOUSINGS
DUCTS & BREECHINGS

SPECIFICATION REFERENCES

SUPER 711 Mineral Fiber Insulating Cement conforms to ASTM C-195-48; Federal Specification HH-C-168 (Class C); and/or Commercial Standard CS-117 of the U. S. Department of Commerce.

SUPER 711 INSULATING CEMENT

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Heating
Heat Treating
Forging
Annealing
Normalizing

TURBINES & PUMPS
FAN HOUSINGS
DUCTS & BREECHINGS

SPECIFICATION REFERENCES

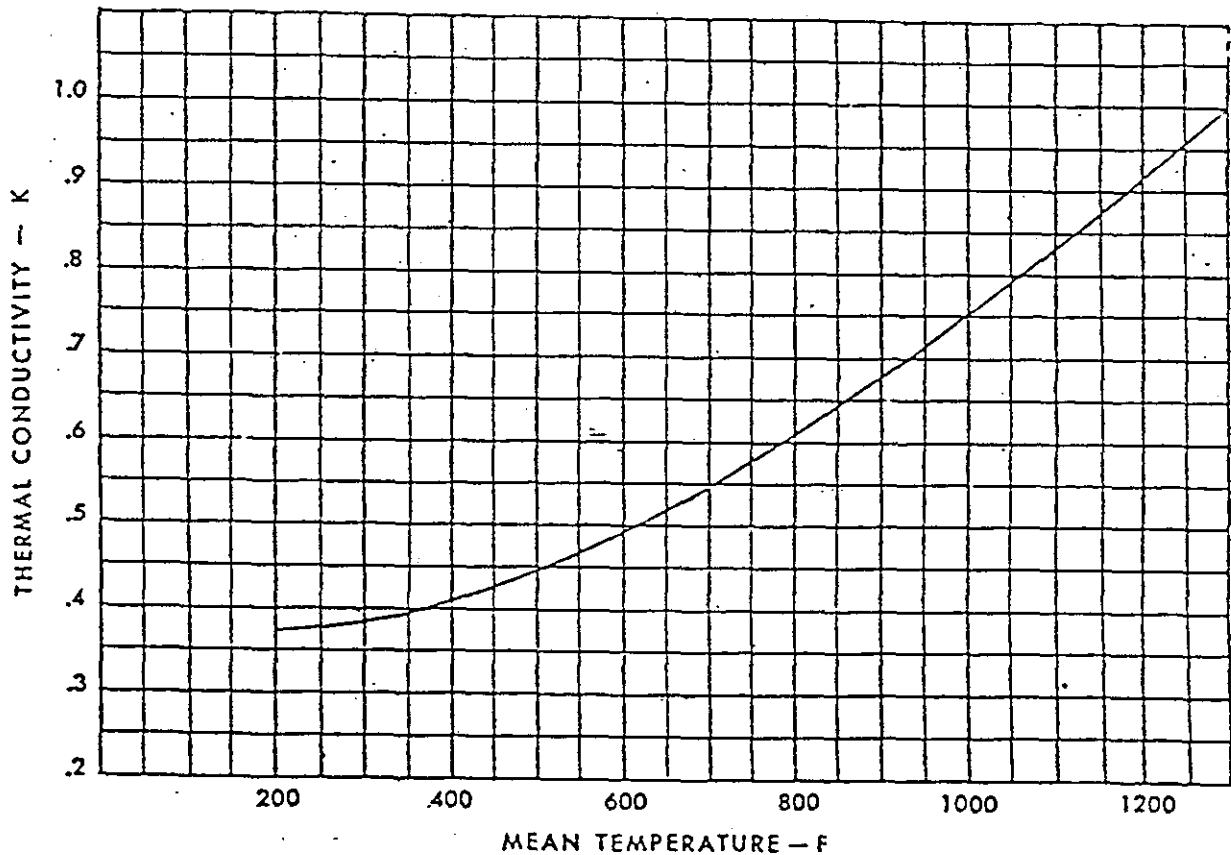
SUPER 711 Mineral Fiber Insulating Cement conforms to ASTM C-195-48; Federal Specification HH-C-168 (Class C); and/or Commercial Standard CS-117 of the U. S. Department of Commerce.

SUMMARY OF PHYSICAL PROPERTIES

Use Limit
Sintering Temperature
Thermal Conductivity
Compressive Strength
Density
Stability
Resistance to Moisture
Resistance to Corrosion
Handling Characteristics

Up to 1800°F.
2100°F.
See Accompanying Graph
18 psi
1.25 lbs./bd. ft.
Inert - durable
Water-repellent
Non-corrosive
Excellent

THERMAL CONDUCTIVITY — GRIPTEX BLOCK



STANDARD SIZES

6"x12"	12"x12"	12"x36"
6"x18"	12"x18"	18"x24"
6"x36"	12"x24"	24"x36"

thicknesses range from 1" to 4"—in 1/2" increments.

TEAR TAPE CARTON

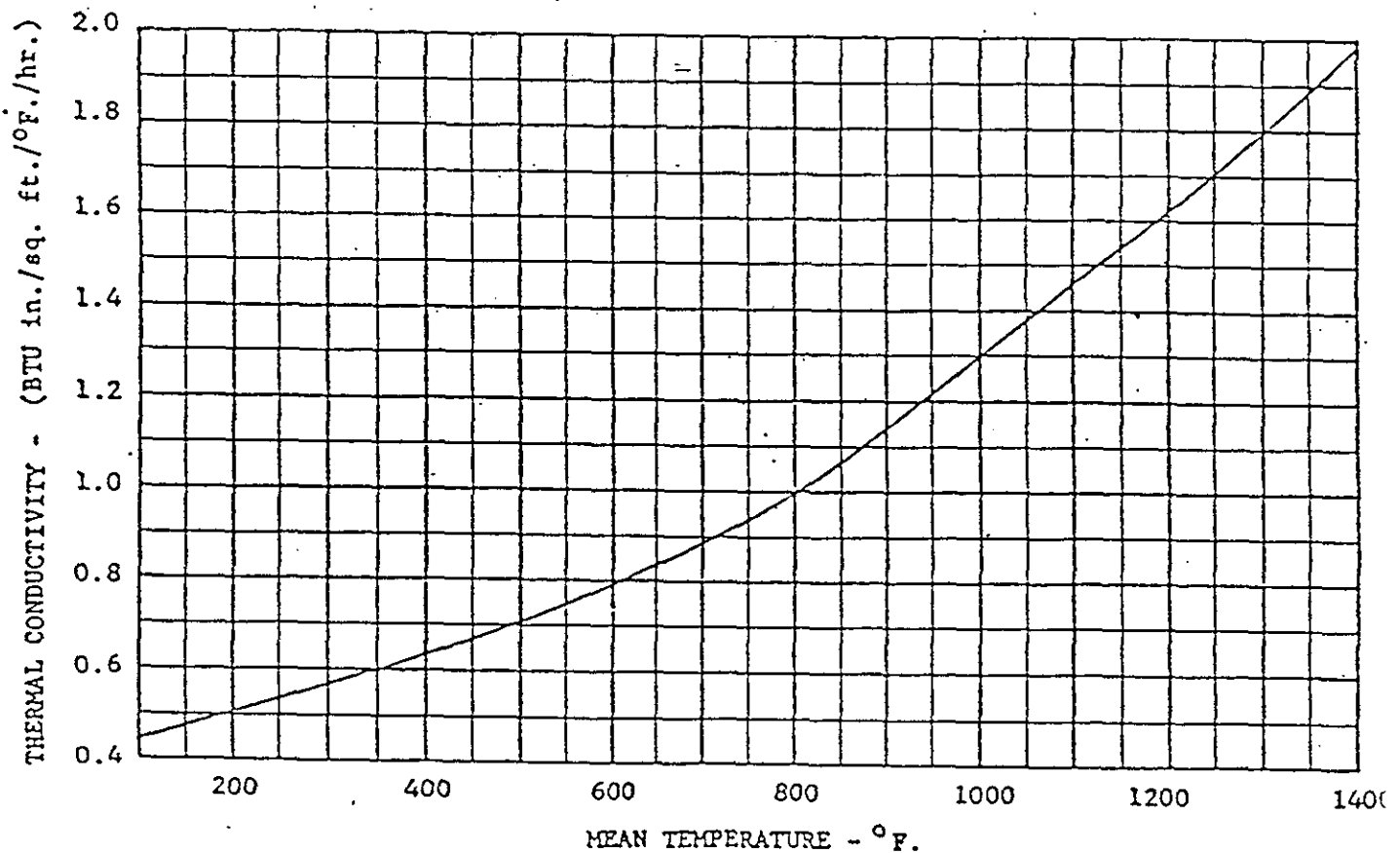
Griptex block is packaged in the new . . . easy open . . . tear tape carton. This easy open carton simply zips in half, forming two convenient containers . . . less waste . . . less damage . . . less lost time.

PHYSICAL PROPERTIES OF SUPER 711 INSULATING CEMENT

Service Temperature	1800°F.
Water Ratio	12 gals. per 50 lbs. bag
Dry Coverage	50 sq. ft. 1" thick per 100 lbs.
Material Requirements	2 lbs. per sq. ft. 1" thick
Compressive Strength	45 psi
Density (Applied and Dried)	24 lbs. per cubic foot
Shrinkage (Wet to Dry, by Volume)	15%
Thermal Conductivity	See Chart
Reclaimable to	1000°F.
Adhesion to Steel (Wet)	6 psi
Adhesion to Steel (Dry)	9 psi
Corrosion Resistance to Steel	Non-corrosive
Shipping Containers (Sewn Closure)	50 lb. paper bags

Tabulated values represent typical performance levels of SUPER 711 Insulating Cement - Trowel Grade. SUPER 711 Grade Cement consists of the same basic materials that smaller mineral wool nodules are utilized to facilitate application.

Thermal Conductivity of SUPER 711 Insulating Cement



Utility Thermal Finish Cement is composed of high quality mineral fiber, hydraulic binders, and other suitable materials. Utility combines the flexibility, high temperature resistance, and excellent insulating qualities of uniformly nodulated mineral fiber with the strength, low shrinkage, and smooth finish of hydraulic setting cement. The result is a quick setting, smooth finish, thermal resistant, single layer insulating finish cement. For temperatures up to 1200°F.

QUICK SETTING

Utility Insulating Finish Cement develops a smooth, durable, protective finish within a few hours after application and without the presence of heat. Subsequent drying produces no excessive surface cracking or shrinkage in thickness, and occasional wetting does no damage after hydraulic set. Long drying periods under normal conditions are eliminated. Saves time in applying weatherproofing paint, or other finishes. Jobs are easier to schedule; scaffolding costs are reduced.

ONE COAT APPLICATION

Utility is normally applied in a single layer application. A second layer is needed only when multiple layer thicknesses are specified. Utility is virtually an all-purpose insulating finish cement, designed primarily for use over Griptex block or blanket insulations. Utility is widely used for insulating valves, fittings, heated equipment, and as an anti-sweat insulation for cold water tanks, pumps, etc.

Utility trowels with a good key on block insulation, blanket insulation and insulating cement. It has good wet adhesion to clean steel surfaces, such as valves and fittings.

PLEASING APPEARANCE

Utility dries to a smooth, light reflectant surface which as an interior finish, requires no further treatment. Utility, however, is easily painted if desired. Outdoor applications should be weather protected. Low temperature applications require a vapor seal type finish.

EXCELLENT THERMAL QUALITIES

Utility has a "K" factor of .79 at 600°F. mean temperature. This excellent insulating value as compared to other finish cements is a very desirable advantage when figuring job and operating costs.

PHYSICAL PROPERTIES

Service Temperature	1200°F.
Water Ratio (Trowel Application)	7 gals. per 50 lb. bag
Dry Coverage (Trowel Application)	37 sq. ft. 1/2" thick per 50 lb. bag
Setting Time	2 to 4 hours average conditions.
Material Requirements (Trowel Application)	1.3 lbs. per sq. ft. 1/2" thick.
Compressive Strength (Air Cured)	135 psi.
Compressive Strength (@ 1200°F.)	105 psi.
Density (Applied and Dried)	35 lbs. per cubic foot.
Shrinkage (Wet to Dry)	Negligible.
"K" Factor at 600°F. Mean Temperature	.79 Btu.
Corrosion Resistance to Steel	Non-corrosive.
Surface Treatment	Easily painted or weatherproofed when required.
Shipping Containers (Sewn Closure)	50 lbs. paper bag.

MIXING

Utility Thermal Finish Cement should be mixed in a clean mortar box or mixer, using approximately 7 gallons of water per 50 lbs. bag for a good troweling consistency over most blocks, blankets, or insulating cements. Because of the hydraulic binder, Utility should not be mixed with water more than two hours in advance of its application. With cold mixing water (below 60°F.) it remains workable up to 4 hrs.

STORAGE

Store in a cool, dry location until ready to use.

PERMISEAL — THERMAL COAT

Basically there are three types of asphalt mastics used in the insulation field. They are usually classified as water emulsion, solvent cutback, or chemical dispersion types. The thinning agent or dispersion chemical determines which basic classification will be given a particular product, and dictates the end use of the resultant product.

It is important to know which thinning agent is used to determine the useful qualities of a particularly blended asphalt mastic. The quality and/or type of basic asphalt determines the service temperature of the product involved.

WATER EMULSION ASPHALT MASTICS

The water emulsion type of asphalt weather coating such as Thermal Coat, is normally a blend of petroleum asphalt, asbestos fiber and Bentonite clay, emulsified in water.

Water emulsions are primarily used as a breathing mastic, i.e., if suitable pressure is built up beneath its surface, moisture present will pass through to the atmosphere. However, atmospheric pressure is normally not sufficient to pass moisture back through to the insulation, except, of course, on low temperature work. In this case, a vapor barrier type mastic such as Duriseal is essential.

Summer grade water emulsions, because of the water present, will freeze and should be protected at all times prior to and during application. Alcohol is usually added to Winter grade emulsions. The amount used determines the resistance to freezing of the resultant product. Water emulsions should always be stored and used at temperatures above freezing in any event. A water emulsion that has been frozen is useless and will "alligator" if applied.

Water emulsions usually are suitable only for trowel application and are used wherever a breathing mastic is required. Because they lack the adhesive qualities and resiliency of a cutback type mastic, they should be mechanically bonded to poultry netting except on extremely small surfaces. They should be used in conjunction with a cutback or dispersion type flashing compound. Water emulsions can only be repaired with such types of mastics since they do not bond to themselves. It is imperative that they be repaired as soon as possible if a break in the applied surface should occur to insure service life of the product.

Thermal Coat may be applied at temperatures up to 200°F. and will withstand a maximum temperature of 450°F. after drying.

CAUTION:

Water emulsions are soluble in water and should not be applied if there is a possibility of rain washing the product within twelve hours of the initial application time. Keep Winter Grade above 20°F.

CHEMICAL DISPERSION TYPE ASPHALT MASTICS

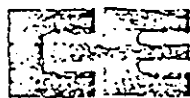
Chemical dispersion type asphalt mastics, such as PERMISEAL, incorporate a unique combination of the desirable qualities of the water emulsion and cutback types. They normally consist of petroleum asphalt dispersed in a non-flammable chemical with suitable fillers, blended in one consistency suitable for brush, trowel or spray applications. Containing non-flammable solvents, they are fire-safe for use around open flame, welding torches and similar hazardous job conditions. They have the breathing characteristic of a water emulsion for a period of sixty to ninety days after application. This controlled curing process prevents shrinkage of the surface film and permits trapped moisture to escape. The result is a flexible, blister free, vapor seal type coating of exceptional toughness. A good chemical dispersion product is not affected by freezing and resists most acids and alkalis. However, solubility in water is a factor, depending upon humidity conditions, for a period of eight to twelve hours or longer after application. The anodizing and rust inhibiting agents contained in PERMISEAL make this product excellent for metal protection purposes. PERMISEAL has a useful service temperature up to 300°F. and a maximum of 400°F.

CAUTION:

Dispersion type mastics should be treated the same as water emulsion types, in that they should not be applied if there is a danger of rain washing within eight to twelve hours of the application time. Under proper temperature and humidity conditions, PERMISEAL will be dry to touch in four hours or less.

WEATHER COATINGS AND SEALERS

CLASSIFICATION	WATER EMULSION	CHEMICAL DISPERSION
	THERMAL COAT	PERMISEAL
Application Method	Trowel	Brush-Trowel-Spray
Maximum Temperature	450 F.	400° F.
Application Temperature	40° F. to 200° F.	40° F. to 200° F.
Coverage - Wet	5-6 sq. ft., 1/4" thick/gal.	10 sq. ft., 1/4" thick/gal.
Coverage - Dried	5-6 sq. ft., 1/8" thick/gal.	10 sq. ft., 1/8" thick/gal.
		20 sq. ft., 1/16" thick/gal.
Trowel or Flash Coat	1/4" thick wet	1/4" thick wet
Brush or Spray Coat	Trowel only	Brush or Spray two 1/8" thick wet coats reinforced as req'd.
Reinforcement when required	Poultry netting	Suitable fabric
General Use	Breather type weater coating	Weather coating and sealer for insulation, masonry steel, alum.
Adhesive Strength	Should be bonded to poultry netting	Excellent after curing on clean dry surface
Curing for Best Results	Avoid low temperature and high humidity conditions	Avoid low temperature and high humidity conditions
Flame Resistance	Non-flammable	Non-flammable
Freeze Resistance	Protect from freezing	Not affected
Corrosion Resistance	Not inhibited	Inhibited against rust and corrosion
Vapor Resistance	Will breathe	Will breathe during 2-3 month curing period, then becomes vapor-seal
Packaged	5 Gal. 50 Gal. Steel Container	5 gal. and 54 gal. (plastic liner) steel container
Shipping Weight	55 lbs. 550 lbs.	45 lbs. 480 lbs.



REFRACTORIES

A DIVISION OF COMBUSTION ENGINEERING, INC.

Technical Bulletin

DURISEAL PROTECTIVE COATINGS

Type T-178, T-278

Duriseal Protective Coatings are special blends of mastics, combined with asbestos fiber and mineral fillers to provide an excellent sealing material. Applied over masonry settings, they dry slowly to form a black, fire-resistant, air-tight film that is impervious to water exposure, chemical attack and normal abrasion. Duriseal Coatings also are used in conjunction with Detrick Thermal Coat where a flexible flashing compound is required to seal joints around openings, as a caulking compound, and for low temperature stack linings to prevent corrosion.

STANDARD TEMPERATURE GRADES (To 400 F)

For surface temperatures that will not be operated in excess of 350-400°F the Standard Grades are recommended. Standard Type T-178 is made to a semi-viscous, troweling consistency.

HIGH TEMPERATURE GRADES (To 700 F)

When surface temperatures will exceed 400°F during operation, but not in excess of 700°F, Duriseal High Temperature Coatings should be used.

EASY TO APPLY

Duriseal Coatings may be applied over any cool, clean, dry surface, using suitable membrane between spray coats and for patching purposes. Where used, membrane should be lapped 4" at all joints or around patch applications. For ease of application, the best workable temperature range is 50°F to 100°F. Storage temperature should not exceed 100°F. Duriseal Protective Coatings require no thinning.

COVERAGE

Material requirements are estimated on wet coverage of approximately 5 to 6 square feet (1/4" thick) per gallon.

CONTAINERS

Duriseal Protective Coatings are shipped in 5 or 55 gallon steel containers.

CAUTION:

Surface during application should be above 100°F for indoor applications or 130°F for outdoor applications. Provide adequate ventilation and do not apply in vicinity of open flame, welding arcs, etc.

FOR FIREPROOFING STRUCTURAL STEEL

Pyroscat is a special formulation of high-temperature aggregates, asbestos fibers, hydraulic binder and other materials. These ingredients are factory blended to a uniform dry mixture that is ready for application after mixing with water at the job site. Pyroscat is adapted to application by spraying, casting and trowelling techniques, depending on job conditions.

USES:

Pyroscat provides a lightweight, fire-retardant protective treatment for structural steel columns, beams, tower skirts, LP gas tanks, and other exposed applications in refineries and chemical plants. Pyroscat sets up to a hard, durable sheath capable of withstanding for hours the 2000°F. flame temperatures and high-pressure water streams commonly encountered in industrial fires.

RECOMMENDED THICKNESSES:

Fire-retardant materials are customarily rated in Hours, based on a given thickness used and on the method of application. For example, fire ratings for steel columns represent the number of hours required for heat from a "standard fire" to penetrate the protective treatment as applied, and to increase the steel column temperature to a critical level (1200°F.) The thermal conductivity and heat capacity of a material are of some importance in an ASTM Fire Test. But the ability of the complete treatment to withstand thermal shock without destruction is one of the most significant factors in determining practical fire ratings in industrial installations.

The Pyroscat thicknesses recommended below were determined by physical tests on a series of sprayed, cast and trowelled applications. Tests included direct exposure to 100 psi hose pressure, both before and after subjecting the Pyroscat treatment to severe flame conditions.

THICKNESS OF PYROSCAT

APPROX. FIRE RESISTANCE RATING

1"	2 Hours
1-3/4"	3 Hours (UL-R-3960)
2"	4 Hours

ADVANTAGES OF PYROSCAT

SAFER WHILE FIGHTING FIRES . . . Many concrete aggregates and common bricks used for fireproofing purposes will spall and shatter when they are heated and subjected to hose stream. Pyroscat remains virtually unaffected after direct flame exposure and saturation with a 200 psi hose stream.

LIGHTER WEIGHT . . . Pyroscat weighs less than 55 lbs./cu. ft. in place, compared to approximately 150 lbs./cu. ft. for conventional concrete fireproofing. Excess dead weight is eliminated. As usually sprayed or trowelled in a protective sheath, Pyroscat weighs about 1/10 as much as formed concrete - at equivalent thickness per running foot.

*A C-E trade name.

ADVANTAGES OF PYROSCAT (Continued)

SPRAY, CAST OR TROWEL . . . Pyroscat is specially formulated to permit installation by spray, trowel and casting techniques, depending on local job conditions. No other fireproofing material is as versatile from an application standpoint. Employs conventional supporting materials and placement. Only the one fireproofing material is required - no need for subsequent finishing layers nor heavy mastic coatings.

DURABLE AND WEATHER-RESISTANT . . . Pyroscat develops great strength from its selected high-temperature aggregates and hydraulic-setting binders. It withstands continued cycles of saturated freeze-and-thaw weathering tests.

SUMMARY OF PHYSICAL PROPERTIES

Coverage (Trowelled)	1.1 cu. ft./50 lb. bag
Material Required (Trowel Application)	45 lbs. per cu. ft.
Air-Cured Weight (After Hydration and Drying)	54.5 lbs. per cu. ft.
Compressive Strength - Air-Cured	1650 psi
Compressive Strength After Firing at 1500°F.	1.5%
Lineal Shrinkage - Air Cured	Less than 1%
Lineal Shrinkage After Firing at 1500°F.	1.5%
Density After Firing at 1500°F.	39.1 lbs. per cu. ft.
Fusion Temperature	2200 F
Thermal Conductivity (k) at 1000°F., Mean Temp.	1.50 8tu
Setting Time	4 to 6 hours
Mixing Water:	
For Spray & Trowel Consistency	3-1/2 Gal. water/50 lbs. bag
For Casting Consistency	5 Gal. water/50 lbs. bag

Curing:

Pyroscat is a cementitious material and should be kept moist during the curing period of 72 hours or longer.



A DIVISION OF COMBUSTION ENGINEERING, INC.

Technical Bulletin

AIR-CHECK

BOILER WALL COATING CEMENT

ELIMINATES AIR INFILTRATION

PREVENTS HEAT LEAKAGE

SAVES FUEL

INCREASES BOILER EFFICIENCY

Air-Check Cement is an asphaltic-asbestos fibre mixture in plastic form for covering the outside of both fire brick and red brick boiler walls. It is also used for pointing up cracks in boiler walls. Its safe, effective limit of usefulness is 350°F.

Air-Check Cement is tough, rubbery, plastic, easy to apply. A 3/16" thick coat troweled over the surface, dries to a thickness of slightly more than 1/8". It remains semi-plastic even though in service for a number of years.

ALL PURPOSE PLASTIC INSULATION

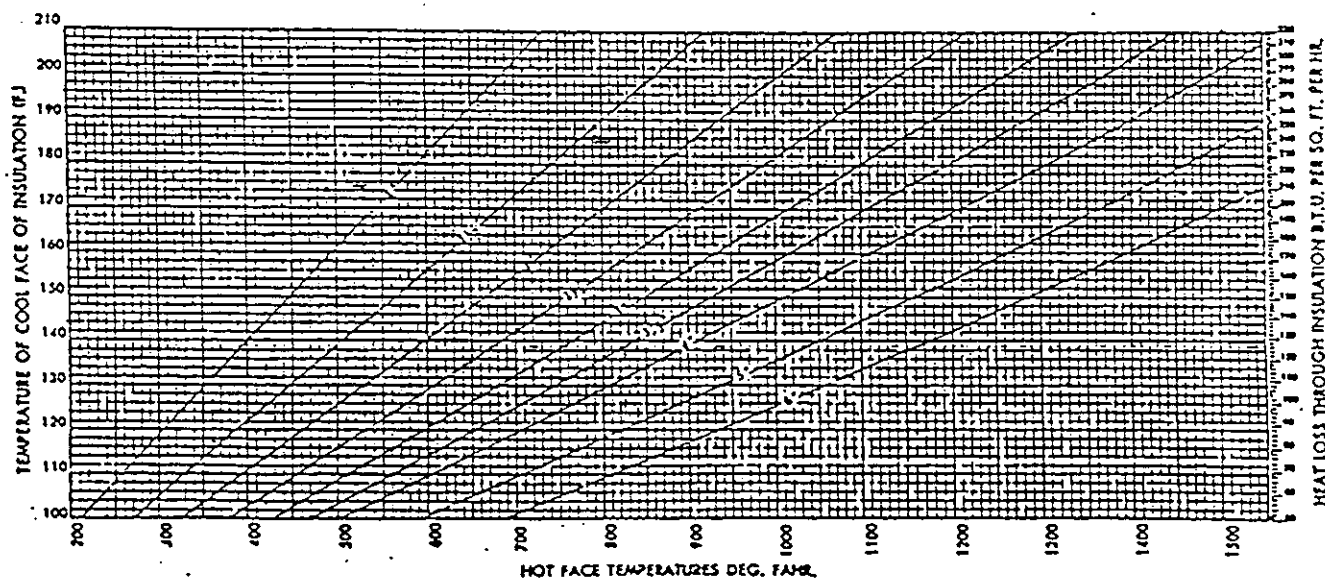
Stic-Tite and Super Stic-Tite plastic insulations are the most versatile insulating materials known. Mixed with water, right on the job, they adhere to any clean surface—and *stay on*—at all temperatures to 1800°F. They are light, strong and unusually durable.

Both Stic-Tites are a powerful barrier against heat loss. Composed of a special mixture of mineral wool and diatomaceous earth, the applied and dried material forms a spongy mass of billions of dead air cells, uniform in size and well isolated from each other. This stops air infiltration and resultant heat transmission.

HOW TO SELECT THE RIGHT THICKNESS

Estimate the operating temperature of your installation, (hot face). Follow the hot face temperature (bottom of chart) vertically until it intersects the line connecting the cool face (left hand column) or B.t.u. loss (right hand column). Use the amount of Stic-Tite indicated on the curve nearest the point of intersection.

For example, assume operating temperature is 825°F. and a cool face of 139° or 126 B.t.u. loss is desired. Follow the 825° line vertically until it intersects the horizontal 139° and 126 B.t.u. loss lines. The intersection is nearest the 3-1/2" Stic-Tite curve. Therefore, 3-1/2" of Stic-Tite should be used. At the same operating temperature if a cool face of 124° or B.t.u. loss of 96 is desired, the intersection would be nearest the 5" Stic-Tite curve. Therefore, 5" of Stic-Tite should be used.



WHERE STIC-TITE IS USED

Air Heaters	Elbows	Hot air lines	Steam pumps
Burner casings	Flanges	Hot piping	Tanks
Boiler, front, side and rear walls	Feed water heaters	Hot water heaters	Tube doors
Breechings	Furnace and Oven; walls, floors, roofs	Kettles	Uptakes
Cookers	Gas generators	Reaction vessels	Valves and fittings
Drum heads	Hot air ducts	Regenerator faces	All irregular surfaces
		Steam heaters	

CAN BE USED ON ALL SURFACES

Stic-Tite adheres strongly and permanently to metal (special inhibitors help prevent rusting of metal surface), tile, brick, insulating block and blankets or other clean surfaces, hot or cold. It can be used in difficult places where other types of insulation are unsuitable—on intricate piping, on elbows and flanges, on slanting vertical or curved surfaces and rounded corners. Stic-Tite provides a monolithic, seamless, jointless covering which can be troweled perfectly smooth for appearance.

EXCELLENT ADHESION—REALLY "STAYS ON"

Stic-Tite adheres permanently without lifting off or shaking loose even when subjected to sever vibration, abrasion or impact.

STOPS HEAT LOSS

The spongy mass of dead air cells checks air infiltration—prevents heat loss. Since dry Stic-Tite does not shrink or form cracks, the high insulating efficiency is never impaired.

EASY TO APPLY

Stic-Tite, mixed with the proper amount of water, forms an easily workable, plastic mass which can be troweled or safely applied with the bare hands. The usual practice is to apply first a roughing coat over the area to be covered, then trowel smooth around joints, over the surface and elbows, curves, etc.

LARGE COVERAGE

Since Stic-Tite dries with practically no shrinkage (an inch of Stic-Tite applied wet remains practically an inch thick when dry), less is required to provide sufficient insulating thickness. Mixed and applied as directed, 100 lbs. of the material cover 45 sq. ft. with a 1" thick layer.

CAN BE REUSED

If used at temperatures below 900°F., old Stic-Tite can be removed from equipment, crushed, mixed with clean water and reapplied like new Stic-Tite. This makes equipment repairs less costly since the insulation can be saved. Reclaimed Stic-Tite is equal to the new product in insulating efficiency, adhesion and plasticity.

SAVES LABOR AND MATERIALS

Stic-Tite is so easy to apply on all types of regular and irregular surfaces and over other insulations that labor cost is very low. Skilled men are not needed. Since Stic-Tite adheres so strongly, reinforcing wires and other supports are unnecessary when used up to 1-1/2" thick.

CONVENIENT PACKING

Stic-Tite is shipped dry in heavy, lined, dustless paper bags containing 25 lbs. and 50 lbs. each. It does not deteriorate in dry storage—can be kept indefinitely if dampness or wet places are avoided.

HOW TO APPLY

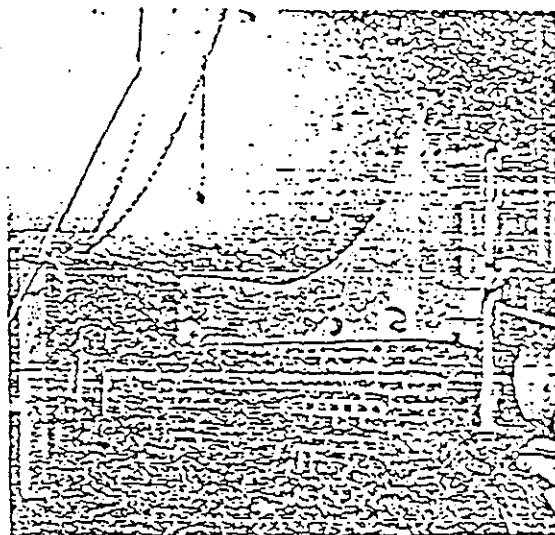
1. Each 50# bag should be mixed with 12 gallons (100 lbs.) of fresh water.
2. After thoroughly mixing, Stic-Tite can be applied immediately, but better results can be obtained by allowing it to soak for at least a half hour or longer.
3. All surfaces to be covered should be free of paint, dust, dirt and grease.
4. Roughing coats can be applied by hand or trowel or combination of hand and trowel.
5. If hot surfaces are to be insulated with Stic-Tite, the material should be spotted in place with a trowel and dragged down to a feather edge. The spotted material will dry quickly and then a rough coat about 1" thick can be applied over and between the spots.
6. On cold surfaces for covering up to 1-1/2" thick, after being mixed according to directions on the bag, Stic-Tite should be applied by spreading it over the surface to as even a thickness as possible. After the rough coat has dried out, a finish coat up to 1/2" thick can be applied over the rough surface and finished with a trowel to a smooth, attractive finish. Stic-Tite can be used up to 1-1/2" thick without reinforcing.
7. For covering over 1-1/2" thick, apply a rough coat about 1" thick. When rough coat is dry apply another 1" coat and continue until desired thickness is obtained. Each coat should be dried before additional coats are applied. Prior to application of finish coat, we recommend reinforcing with #20 gauge 2" mesh chicken wire.
8. Finish coats should be applied from 1/4" to 1/2" thick, troweled to a smooth, hard finish. Where desired, Stic-Tite finish can be painted. Best results are obtained by painting with a glue sizing and paint over this.
9. If more Stic-Tite is mixed than can be used, the left over material can be laid aside and remixed with water at a later date when it is required.



REFRACTORY & INSULATION CORPORATION

UTILITY THERMAL FINISH CEMENT

Utility Thermal Finish Cement is composed of high quality mineral fiber, hydraulic binders, and other suitable materials. Utility combines the flexibility, high temperature resistance, and excellent insulating qualities of uniformly nodulated mineral fiber with the strength, low shrinkage, and smooth finish of hydraulic setting cement. The result is a quick setting, smooth finish, thermal resistant, single layer insulating finish cement. For temperatures up to 1200°F.



QUICK SETTING

Utility Insulating Finish Cement develops a smooth, durable, protective finish within a few hours after application and without the presence of heat. Subsequent drying produces no excessive surface cracking or shrinkage in thickness, and occasional wetting does no damage after hydraulic set. Long drying periods under normal conditions are eliminated. Saves time in applying weatherproofing, paint, or other finishes. Jobs are easier to schedule; scaffolding costs are reduced.

ONE COAT APPLICATION

Utility is normally applied in a single layer application. A second layer is needed only when multiple layer thicknesses are specified. Utility is virtually an all-purpose insulating finish cement, designed primarily for use over Griptex block or blanket insulations. Utility is widely used for insulating valves, fittings, heated equipment, and as an anti-sweat insulation for cold water tanks, pumps, etc.

Utility trowels with a good key on block insulation; blanket insulation and insulating cement. It has good wet adhesion to clean steel surfaces, such as valves and fittings.

PLEASING APPEARANCE

Utility dries to a smooth, light reflectant surface which as an interior finish, requires no further treatment. Utility, however, is easily painted if desired. Outdoor applications should be weather protected. Low temperature applications require a vapor seal type finish.

EXCELLENT THERMAL QUALITIES

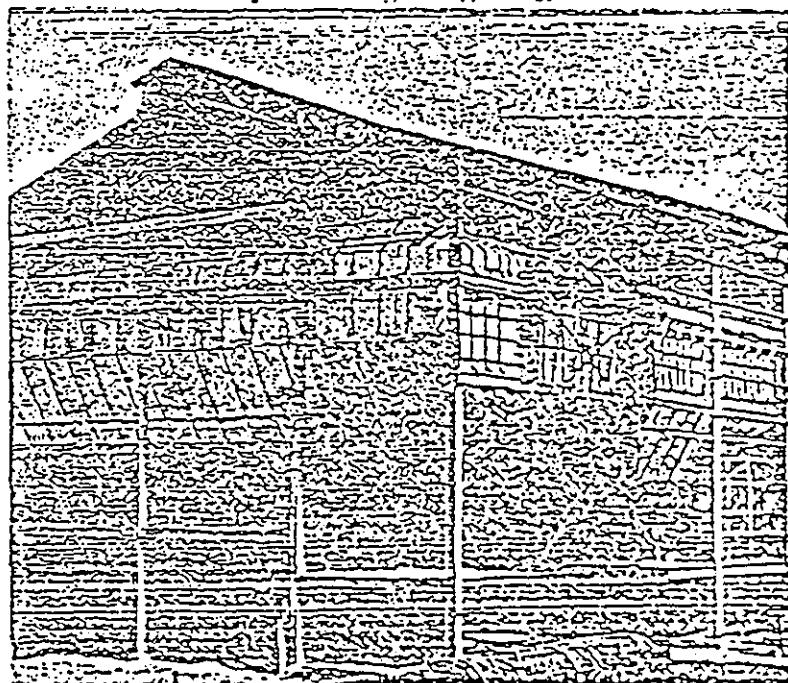
Utility has a "K" factor of .79 at 600°F. mean temperature. This excellent insulating value as compared to other finish cements is a very desirable advantage when figuring job and operating costs.

PHYSICAL PROPERTIES

Service Temperature	1200°F.
Water Ratio (Trowel Application)	7 gals. per 50 lb. bag.
Dry Coverage (Trowel Application)	37 sq. ft. 1/2" thick per 50 lb. bag
Setting Time	2 to 4 hrs. average conditions.
Material Requirements (Trowel Application)	1.3 lbs. per sq. ft. 1/2" thick.
Compressive Strength (Air Cured)	135 psi.
Compressive Strength (@1200°F.)	105 psi.
Abrasion Factor (Air Cured)	98 seconds (MHD Method 102).
Density (Applied and Dried)	35 lbs. per cubic foot.
Shrinkage (Wet to Dry)	Negligible.
"K" Factor at 600°F. Mean Temperature	.79 Btu.
Corrosion Resistance to Steel	Non-corrosive.
Surface Treatment	Easily painted or weatherproofed when required.
Shipping Containers (Sewn Closure)	50 lb. paper bag.

MIXING

Utility Thermal Finish Cement should be mixed in a clean mortar box or mixer, using approximately 7 gallons of water per 50 lb. bag for a good troweling consistency over most blocks, blankets, or insulating cements. Because of the hydraulic binder, Utility should not be mixed with water more than two hours in advance of its application. With cold mixing water (below 60°F), it remains workable up to 4 hrs.



Utility Gunned on Balloon Flue.

STORAGE

Store in a cool, dry location until ready to use.

REFRACTORY & INSULATION CORPORATION
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AURORA, ILLINOIS

PORT KENNEDY
PENNSYLVANIA



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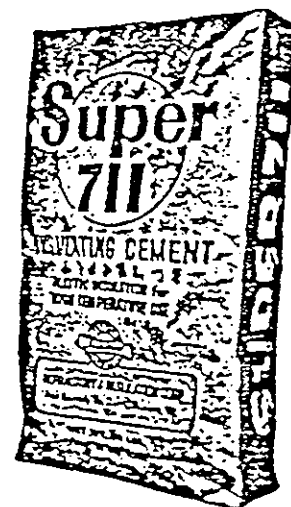
SUPER 711 INSULATING CEMENT

Trowel or Gun Grade

SUPER 711 Insulating Cement is a mixture of high temperature mineral fibers specially processed into resilient wool nodules, combined with asbestos and suitable binders to form a high temperature plastic insulation. Water added according to directions gives a trowelable consistency that is ready for application on equipment to be operated at temperatures up to 1800°F.

WIDE USAGE

SUPER 711 is a versatile material for many types of insulation requirements. Applied over block or blanket insulations, it fills open joints and provides a monolithic surface for whatever type of subsequent finish is specified. Its plastic flexibility permits application directly to regular or curved surfaces -- such as valves, fittings, tanks and vessels.



EASY TO APPLY

SUPER 711 has excellent adhesive qualities. Its increased stickability means a better job in less time, from wet to dry. Will not slip or roll under trowel application and may be easily gun applied. This superior workability is a result of fine mineral nodules, special manufacturing methods and quality control.

MAXIMUM COVERAGE - LOW SHRINKAGE

SUPER 711 Insulating Cement assures maximum coverage and low shrinkage. The resilient nodules of mineral fiber do not collapse when mixed with water. See table of Physical Properties for coverage.

RECOMMENDED USES

BOILERS

Drums
Headers
Walls
Economizers
Air Preheaters

FURNACES

Heating
Heat Treating
Forging
Annealing
Normalizing

OVENS, KILNS & DRYERS
VALVES & FITTINGS
TANKS & VESSELS

TURBINES & PUMPS
FAN HOUSINGS
DUCTS & BREECHINGS

SPECIFICATION REFERENCES

SUPER 711 Mineral Fiber Insulating Cement conforms to ASTM C-195-48; Federal Specification HH-C-168 (Class C); and/or Commercial Standard CS-117 of the U.S. Department of Commerce.

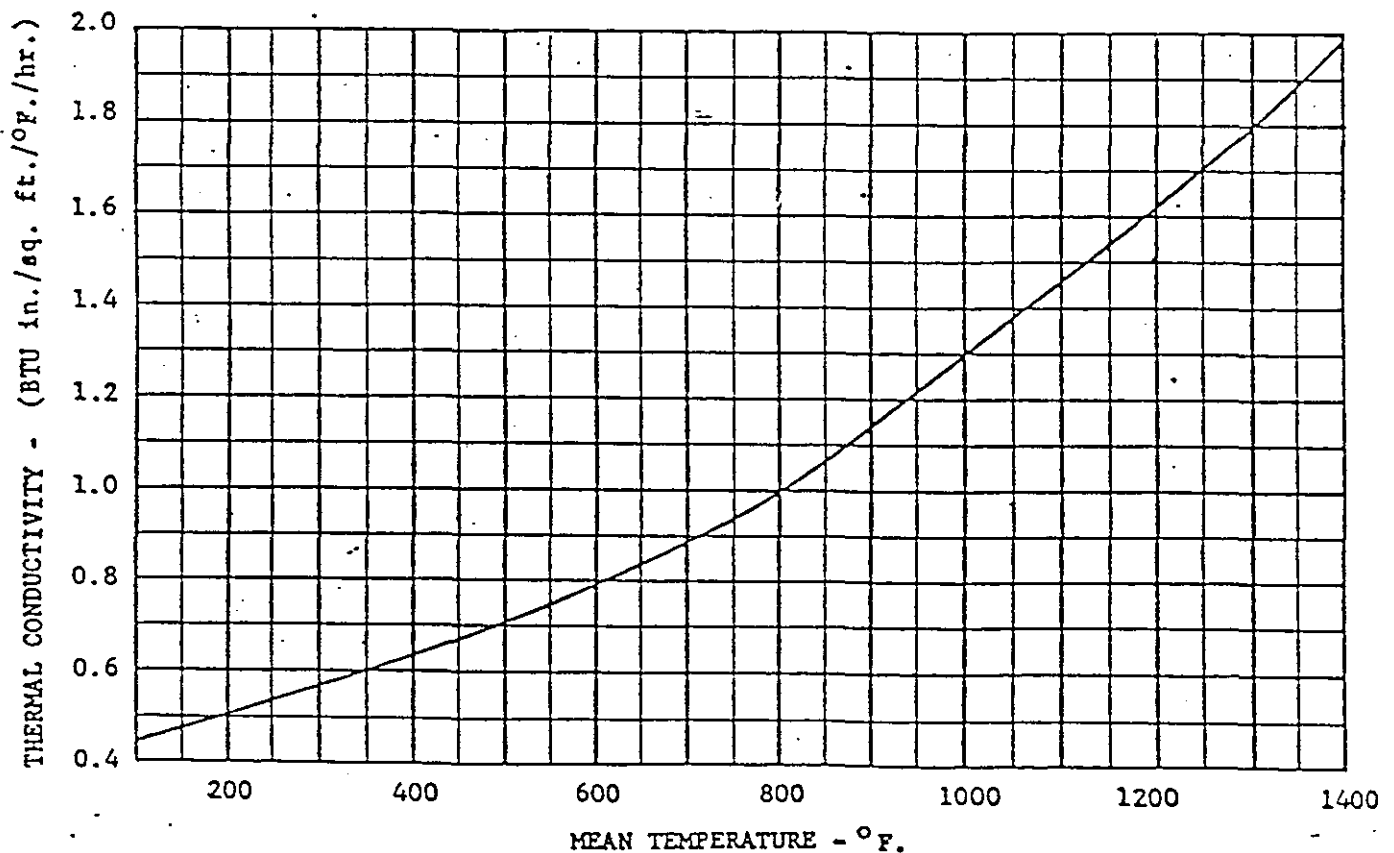
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PHYSICAL PROPERTIES OF SUPER 711 INSULATING CEMENT

Service Temperature	1800°F.
Water Ratio	12 gals. per 50 lb. bag
Dry Coverage	50 sq. ft. 1" thick per 100 lbs.
Material Requirements	2 lbs. per sq. ft. 1" thick
Compressive Strength	45 psi
Density (Applied and Dried)	24 lbs. per cubic foot
Shrinkage (Wet to Dry, by Volume)	15%
Thermal Conductivity	See Chart
Reclaimable to	1000°F.
Adhesion to Steel (Wet)	6 psi
Adhesion to Steel (Dry)	9 psi
Corrosion Resistance to Steel	Non-corrosive
Shipping Containers (Sewn Closure)	50 lb. paper bags

Tabulated values represent typical performance levels of SUPER 711 Insulating Cement - Trowel Grade. SUPER 711 "Gun" Grade Cement consists of the same basic materials that smaller mineral wool nodules are utilized to facilitate application.

THERMAL CONDUCTIVITY OF SUPER 711 INSULATING CEMENT



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PYROSCAT* FIREPROOFING CEMENT

Application Details for Steel Columns and Beams

A. Surface Preparation

1. Remove dirt, scale or loose paint from the surface to be treated, then apply rust preventative paint or coating when specified.
2. For trowel applications to columns and beams, form 3/8" rib lath (or paper-backed lath) to box-in the member. Apply rib lath with ribs turned in and spanned from flange to flange. On members 14" and larger, first weld 1/4" rods across the flanges approximately 12" to 18" on centers to provide additional support for the lath. Secure the lath in place with wire or bands. For gun application, use 2 x 2 #16 paper-backed lath such as Steeltex.
 - a) Provide 2" firestops on columns at 8' to 12' intervals (or as otherwise specified). Form the metal lath into a horizontal shelf extending to and supported at the web. Apply Pyroscat 2" thick in the opening. Provide similar stops at the top elevation of the fireproofing.
 - b) Plasterer's corner bead may be wired to the metal lath, forming and supporting it to attain the total Pyroscat thickness specified. Corner bead shall be of the type having open-mesh legs to facilitate complete filling of the corners. The corner bead may be spaced the proper distance from the flanges by means of corner clips, rods, studs; or Pyroscat may be spotted-in to space the corner bead at specified fireproofing thickness.

B. Application of Pyroscat

1. Mix Pyroscat to recommended consistency with clean, fresh water, before application. Refer to mixing instructions on the bag and use no more water than called for. Mix Pyroscat to a homogeneous plastic mass; avoid over-mixing, particularly with mechanical mixers.
 - a) Apply Pyroscat well into the metal lath, installing approximately 1/2 the total thickness in the scratch coat. Leave the first coat rough or scratch the surface.
 - b) On the underside of beams, the application may be in three coats. Apply a thin scratch coat first to improve adhesion.
 - c) If corner bead was not applied previously, wire it in place when the scratch coat has set.
2. Let the scratch coat harden until well set (4 to 6 hours or longer), then double-back with the finish coat. Apply it flush with the corner bead. Sponge-float the surface to a textured finish or as otherwise specified.
 - a) When application of the finish coat is deferred over night or longer, wet down the scratch coat thoroughly before proceeding with the finish coat.

(38)

C. Curing Pyroscat

1. Pyroscat is a cementitious material; to develop its strength, keep it moist for 72 hours or longer. Depending on atmospheric conditions when applied, the required water retention may be accomplished with wet burlap, periodic water spray or a hydrostatic (resin-base) sealer.
2. Following the curing period and when visual moisture has dried, apply a suitable flashing material at all intersecting joints and exposed ends of members treated (Duriseal T-178 Coating).
3. Pyroscat may be painted with (1) masonry paint, (2) two coats of asphalt-base aluminum paint, or (3) other finishes as specified for operating conditions involved. (Note: When conventional masonry paint of the hydrating-type is used, wet down the Pyroscat before painting to insure proper hydration).

ALTERNATES FOR TOWER SKIRTS (VERTICAL)

- A-2 Attach a layer of 1" x 1" square mesh reinforcing, positioned 1" away from the skirt, i.e., at the approximate center of the fireproofing thickness specified.
- a) Trowel or gun Pyroscat solidly through openings in the square mesh, bringing the scratch coat out approximately 1" thick. Start at the bottom of the skirt and work upward. Leave the surface rough, or scratch it when trowel applied.
 - b) Screed strips may be attached temporarily over the square mesh reinforcing, to accurately gauge the thickness of the second layer.
 - c) When fireproofing is applied to skirts of heated vessels while they are in operation, heat conducted to the skirt may prematurely dry the initial layer of Pyroscat. Wet the first coat thoroughly, particularly at the top, before applying the final layer.

ALTERNATES FOR HORIZONTAL TANKS

- A-2 Bolster bars are preferred for anchorage of the reinforcing mesh. The bolster bar selected would have legs extending from the tank surface approximately one-half of the total thickness of Pyroscat to be applied. Form the bolster bars to fit the tank curvature, then weld or wire in place circumferentially approximately 3' on centers. Wire the reinforcing mesh to the bolster bars.
- C-3 When tanks so fireproofed are to be operated below ambient temperature, suitable vapor-sealing treatment is recommended after the Pyroscat has been cured, dried and flashed.



REFRACTORY & INSULATION CORPORATION

PYROSCAT

For Fireproofing Structural Steel

Pyroscat is a special formulation of high-temperature aggregates, asbestos fibers, hydraulic binder and other materials. These ingredients are factory blended to a uniform dry mixture that is ready for application after mixing with water at the job site. Pyroscat is adapted to application by spraying, casting and trowelling techniques, depending on job conditions.

USES:

Pyroscat provides a lightweight, fire-retardent protective treatment for structural steel columns, beams, tower skirts, LP gas tanks, and other exposed applications in refineries and chemical plants. Pyroscat sets up to a hard, durable sheath capable of withstanding for hours the 2000°F. flame temperatures and high-pressure water streams commonly encountered in industrial fires.

RECOMMENDED THICKNESSES:

Fire-retardent materials are customarily rated in Hours, based on a given thickness used and on the method of application. For example, fire ratings for steel columns represent the number of hours required for heat from a "standard fire" to penetrate the protective treatment as applied, and to increase the steel column temperature to a critical level (1200°F.). The thermal conductivity and heat capacity of a material are of some importance in an ASTM Fire Test. But the ability of the complete treatment to withstand thermal shock without destruction is one of the most significant factors in determining practical fire ratings in industrial installations.

The Pyroscat thicknesses recommended below were determined by physical tests on a series of sprayed, cast and trowelled applications. Tests included direct exposure to 100 psi hose pressure, both before and after subjecting the Pyroscat treatment to severe flame conditions.

Thickness of Pyroscat

Approx. Fire Resistance Rating

1"
1-3/4"
2"

2 Hours
3 Hours - (UL-R-3960)
4 Hours

38 a.

ADVANTAGES OF PYROSCAT

Safer While Fighting Fires Many concrete aggregates and common bricks used for fireproofing purposes will spall and shatter when they are heated and subjected to a hose stream. Pyroscat remains virtually unaffected after direct flame exposure and saturation with a 100 psi hose stream.

ADVANTAGES OF PYROSCAT (Continued)

Lighter Weight... Pyroscat weighs less than 55 lbs./cu. ft. in place, compared to approximately 150 lbs./cu. ft. for conventional concrete fireproofing. Excess dead weight is eliminated. As usually sprayed or trowelled in a protective sheath, Pyroscat weighs about 1/10 as much as formed concrete - at equivalent thickness per running foot.

Spray, Cast or Trowel... Pyroscat is specially formulated to permit installation by spray, trowel and casting techniques, depending on local job conditions. No other fireproofing material is as versatile from an application standpoint. Employs conventional supporting materials and placement. Only the one fireproofing material is required - no need for subsequent finishing layers nor heavy mastic coatings.

Durable and Weather-Resistant... Pyroscat develops great strength from its selected high-temperature aggregates and hydraulic-setting binders. It withstands continued cycles of saturated freeze-and-thaw weathering tests.

SUMMARY OF PHYSICAL PROPERTIES:

Coverage (Trowelled)	1.1 cu. ft./50 lb. bag
Material Required (Trowel Application)	45 lbs. per cu. ft.
Air-Cured Weight (After Hydration and Drying)	54.5 lbs. per cu. ft.
Compressive Strength - Air-Cured	1650 psi
Compressive Strength After Firing at 1500°F.	1.5%
Lineal Shrinkage - Air Cured	Less than 1%
Lineal Shrinkage After Firing at 1500°F.	1.5%
Density After Firing at 1500°F.	49.1 lbs. per cu. ft.
Fusion Temperature	2200 F
Thermal Conductivity (k) at 1000°F. Mean Temp.	1.50 Btu
Setting Time	4 to 6 hours
Mixing Water:	
For Spray & Trowel Consistency	3-1/2 Gal. water/50 lb. bag
For Casting Consistency	5 Gal. water/50 lb. bag

Curing:

Pyroscat is a cementitious material and should be kept moist during the curing period of 72 hours or longer.

REFRACTORY & INSULATION CORPORATION
625 ILLINOIS AVE.
AURORA, ILLINOIS

PORT KENNEDY
PENNSYLVANIA



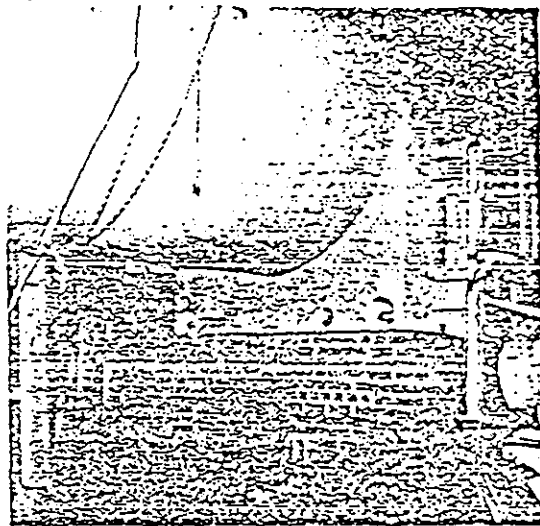
REFRACTORY & INSULATION CORPORATION

UTILITY THERMAL FINISH CEMENT

Utility Thermal Finish Cement is composed of high quality mineral fiber, hydraulic binders, and other suitable materials. Utility combines the flexibility, high temperature resistance, and excellent insulating qualities of uniformly nodulated mineral fiber with the strength, low shrinkage, and smooth finish of hydraulic setting cement. The result is a quick setting, smooth finish, thermal resistant, single layer insulating finish cement. For temperatures up to 1200°F.

QUICK SETTING

Utility Insulating Finish Cement develops a smooth, durable, protective finish within a few hours after application and without the presence of heat. Subsequent drying produces no excessive surface cracking or shrinkage in thickness, and occasional wetting does no damage after hydraulic set. Long drying periods under normal conditions are eliminated. Saves time in applying weatherproofing, paint, or other finishes. Jobs are easier to schedule; scaffolding costs are reduced.



ONE COAT APPLICATION

Utility is normally applied in a single layer application. A second layer is needed only when multiple layer thicknesses are specified. Utility is virtually an all-purpose insulating finish cement, designed primarily for use over Griptex block or blanket insulations. Utility is widely used for insulating valves, fittings, heated equipment, and as an anti-sweat insulation for cold water tanks, pumps, etc.

Utility trowels with a good key on block insulation, blanket insulation and insulating cement. It has good wet adhesion to clean steel surfaces, such as valves and fittings.

PLEASING APPEARANCE

Utility dries to a smooth, light reflectant surface which as an interior finish, requires no further treatment. Utility, however, is easily painted if desired. Outdoor applications should be weather protected. Low temperature applications require a vapor seal type finish.

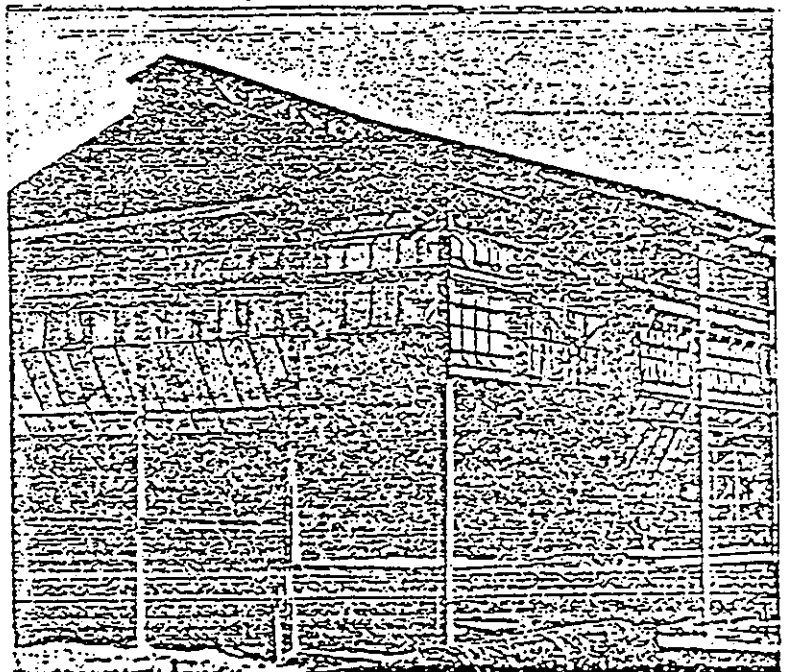
EXCELLENT THERMAL QUALITIES

Utility has a "K" factor of .79 at 600°F. mean temperature. This excellent insulating value as compared to other finish cements is a very desirable advantage when figuring job and operating costs.

Service Temperature	1200°F.
Water Ratio (Trowel Application)	7 gals. per 50 lb. bag.
Dry Coverage (Trowel Application)	37 sq.ft. 1/2" thick per 50 lb. bag
Setting Time	2 to 4 hrs. average conditions.
Material Requirements (Trowel Application)	1.3 lbs. per sq.ft. 1/2" thick.
Compressive Strength (Air Cured)	135 psi.
Compressive Strength (@1200°F.)	105 psi.
Abrasion Factor (Air Cured)	98 seconds (MHD Method 102).
Density (Applied and Dried)	35 lbs. per cubic foot.
Shrinkage (Wet to Dry)	Negligible.
"K" Factor at 600°F. Mean Temperature	.79 Btu.
Corrosion Resistance to Steel	Non-corrosive.
Surface Treatment	Easily painted or weatherproofed when required.
Shipping Containers (Sewn Closure)	50 lb. paper bag.

MIXING

Utility Thermal Finish Cement should be mixed in a clean mortar box or mixer, using approximately 7 gallons of water per 50 lb. bag for a good troweling consistency over most blocks, blankets, or insulating cements. Because of the hydraulic binder, Utility should not be mixed with water more than two hours in advance of its application. With cold mixing water (below 60°F), it remains workable up to 4 hrs.



Utility Gunned on Balloon Flue.

STORAGE

Store in a cool, dry location until ready to use.

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