PLAINTIFF'S
EXHIBIT
DUP-657

EM-1029

E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON, DELAWARE 19898

ENGINEERING DEPARTMENT

cc: H.E.Huckins-Design
R.N.McCormick-ETC
A.G.Adams-Constr.-Chambers Works
F.A.Crosson-EM&I
R.L.Mooney-Constr.-Beaumont
J.V.Flynn-Orchem-Chambers Works
H.V.Stalnaker-FDC-Red Mill-Box 12
G.R.Harry-DuPont of Canada-Kingston
IC 32

A.G. ADAMS

August 15, 1977

PRESENT: J. R. ALLEN - CHAIRMAN - ESD
J. V. ANDERSON - CONSTRUCTION
J. C. BARBER - ENERGY & MATERIALS
E. R. BROOKS - CONSTRUCTION - SEAFORD
R. DE WITT (ALT FOR L. C. JENNINGS) - ORCHEM - CHAMBERS WORKS ADMINISTRATION BUILDING
G. E. LANG - ESD
A. O. MC ALISTER - DESIGN
B. R. VAUGHN - TEXTILE FIBERS - KINSTON
J. C. THOMPSON - STANDARDS SECTION

ABSENT: H. A. MOAK - DESIGN
L. M. PERRY - PHOTO PRODUCTS - PARLIN

VISITOR: W. V. HERRIN - ENERGY & MATERIALS - WILMINGTON
A. G. ADAMS - CONSTRUCTION - CHAMBERS WORKS

STANDARDS SECTION - PROCESS INSULATION SUBCOMMITTEE
MINUTES FOR THE MEETING HELD WEDNESDAY, AUGUST 10, 1977
AT 9:00 A.M. IN ROOM 5229, LOUVIERS BUILDING

1. APPROVAL OF MINUTES
The minutes of the previous meeting were approved as recorded.

2. REPORT ON ACOUSTICS SUBCOMMITTEE
This item will be carried due to the absence of H. A. Moak.

3. REVIEW OF NEW STANDARD SN1M - ALPHABETICAL LISTING OF MATERIALS
Thompson reported the standard is not quite complete but it should be out of Composition in September and issued on serial letter in October.

4. IDENTIFICATION OF DU PONT CODES 118 AND 118.1
Barber reported that he sent a telex to Upjohn but had not yet received a reply. Subsequent to the meeting, Lang was contacted by Upjohn and the chemical analysis reported on in the July minutes was not successful. Upjohn's Houston facility will be making a run with colored (pink) material and will let us know the results.

5. INSUL-COUSTICS IC 651 - CANDIDATE FOR CODE 734
Billy Vaughn reported at the last meeting that he used some IC 651 and it worked very well. He is waiting to see how well it holds up. A decision on the material will be delayed until Perry reportes on his field trial at Parlin.

DUP 0920544

DU 033940

6. ALPHA & J. P. STEVENS' REWETTABLE GLASS CLOTH - CODE 720
Lang reported that from all reports, this material is performing satisfactorily and this item can be dropped.

7. MOLDED CERAMIC FIBER INSULATION
Lang reported that there is no great action taking place on this subject at this time.

8. DURALITE BY MAROCO, INC. - CANDIDATE FOR STANDARDS - CODE 102.1
G. E. Lang reported that there are plans to use Duralite at several plants. A decision on the addition of it to SN100M - Code 102.1 will be delayed until after field trials have been completed.

9. SN206P - NEW APPLICATION AND INSULATION OF TRACED PIPING AND EQUIPMENT
We expect to review the proposed revision of this specification at the next meeting.

10. SN165A - INSULATION SYSTEMS FOR DUAL-TEMPERATURE EQUIPMENT, MINUS 100° TO PLUS 300°F
Thompson and McAlister reported that this specification will be completed before the next meeting.

11. SN40CM - LOOSE FILL INSULATION
J. C. Thompson reported that L. C. Jennings still has to furnish a revised copy of this specification for issue.

12. OLD BUSINESS

Rain Shed Angles on Vessels
Lang circulated copies of price comparison between fabricated angles versus standard rolled angles for use as a rain shed on vessels.

13. NEW BUSINESS

*Southwest Grease and Oil Co. - Candidate for Standards
Lang circulated technical data on a material manufactured by Southwest Grease and Oil Company. They have a material that can be used as a vapor barrier and also as a bedding and joint sealer. Tests are being conducted on this material at the Engineering Test Center and it is hoped that the results will be available for the next meeting.

*Lang reported that we are pursuing a moisture resistant glass cloth with several manufacturers.

14. BROOKS' RECOMMENDED REVISIONS TO SN180A-SN185A - INSULATION SYSTEMS FOR HOT PIPE
E. R. Brooks proposed that we delete the paragraphs in SN180A and SN185A that permit the use of cements to fill cracks because of insulator's over-use of them.

DUP 0920545

DU 033941

The paragraphs involved are 5.6.3 in SN180A and 5.2.3 in SN185A. The subcommittee concurred with Brooks' recommendations. These specifications will be revised accordingly.

15. ADJOURNMENT
The meeting was adjourned at 10:50 a.m.

16. NEXT MEETING
The next meeting of the Process Insulation Subcommittee will be held on Wednesday, September 14, 1977 at 9:00 a.m. in Room 5229, Louviers Building.

JCT:tsa
Atch

DUP 0920546

CLASSIFICATION	Fluid and Plastic Insulation
SPEC. NUMBER	SN 500 M
MATERIAL CODE	501
MATERIAL DESIGNATION	Asphalt Cutback, Cork Filled
PURPOSE	Thermal insulation for exterior of duct-work and equipment to prevent conden-sation under mild conditions.
MATERIAL DESCRIPTION	Asphalt cutback containing asbestos fibers, clay, and 65% to 70% cork by volume (wet). Consistency shall be suitable for spraying.
SUITABLE FOR USE:	
• On Unprotected Aluminum	Yes
• In direct contact with austenitic stainless steel at or above 140°F.	Yes
RECOMMENDED TEMP. RANGE	40F to 150F
K FACTOR BTU/(HR.)(SQ. FT.)(°F/IN.)	0.70 Maximum at 100F Mean
MOISTURE RESISTANCE OR WATER VAPOR PERMEABILITY	Not to exceed 0.2 perms (wet cup test)
DENSITY	Approximately 6 Lb. Per Gal.
COMPRESSIVE STRENGTH Specimen 6" x 6" x 2" Load Rate 0.10 Per Min.	
RESISTANCE TO HANDLING BREAKAGE	Good
DIMENSIONS	DUP 0920547

FLAME SPREAD RATING	Approximately 115. A coat of asphalt aluminum coating (Code 721) will reduce flame spread rating to below 75.
SPECIFICATIONS, QUALIFICATIONS, LIMITATIONS	Shall not absorb water, check or crack. Sag of 1/4" thick sprayed wet film on clean dry vertical metal surface shall not exceed 1/4" at 75F. Dry film shall resist alkali and dilute acid solutions (except nitric).
APPROVED MATERIALS & VENDORS	Insul-Mastic, No. 553-Type D (Porter Paint Co.) Cork Filled Mastic-407 FR (Electro Chemical Engg. & Mfr. Co.) Nokorode K-Kote (Lion Oil Co.)
NOTES:	

DUP 0920548

CLASSIFICATION	Fluid and Plastic Insulation
SPEC. NUMBER	SN 500 M
MATERIAL CODE	502
MATERIAL DESIGNATION	Insulating Cement
PURPOSE	High temperature cement for insulating hot irregular surfaces, general insulation work, and patching or repair.
MATERIAL DESCRIPTION	Asbestos free, dry mixture containing mineral wool pellets and bonding clays.
SUITABLE FOR USE:	
• On Unprotected Aluminum	No
• In direct contact with austenitic stainless steel at or above 140°F.	No
RECOMMENDED TEMP. RANGE	100F to 1 600F (Note 1)
K FACTOR BTU/(HR.)(SQ. FT.)(°F/IN.)	0.80 Maximum at 500F Mean
MOISTURE RESISTANCE OR WATER VAPOR PERMEABILITY	Absorbant
DENSITY	Approximately 24 Lb. per Cubic Foot
COMPRESSIVE STRENGTH Specimen 6" x 6" x 2" Load Rate 0.10 Per Min.	30 psi at 10% Deformation
RESISTANCE TO HANDLING BREAKAGE	———
DIMENSIONS	———

DUP 0920549

FLAME SPREAD RATING	
SPECIFICATIONS, QUALIFICATIONS, LIMITATIONS	Shall not corrode steel. Shall not check, crack, or powder upon drying. Minimum adhesive strength 4 psi, measured by ASTM C-195. Apply in maximum 3/4" thick layers with each layer permitted to dry before next application.
APPROVED MATERIALS & VENDORS	✓ Armatemp No. 166 (AC and S, Inc.) ✓ Eagle-Picher Super 66 (Eagle-Picher Sales Corporation) ✓ Super 1900 (Keene Corporation, Indust. Insulation Div.) ✓ Insulating Cement No. 460 (Johns-Manville Sales Corporation ✓ Insulating Cement-MW50 (The Celotex Corporation) ✓ Delta Maid High Temp Master (Rock Wool Manufacturing Company)
NOTES:	1. Contact vendor for higher temperature range.

DUP 0920550

DU 033946

CLASSIFICATION	Fluid and Plastic Insulation
SPEC. NUMBER	SN 500 M
MATERIAL CODE	502.1
MATERIAL DESIGNATION	Insulating and Finishing Cement
PURPOSE	For pointing up irregular surfaces, filling joints and voids.
MATERIAL DESCRIPTION	Asbestos free, dry hydraulic setting mixture containing mineral wool, portland cement and selected clay.
SUITABLE FOR USE:	
• On Unprotected Aluminum	No
• In direct contact with austenitic stainless steel at or above 140°F.	No
RECOMMENDED TEMP. RANGE	100F to 1,000F (Note 1)
K FACTOR BTU/(HR.)(SQ. FT.)(°F/IN.)	0.86 Maximum at 500F Mean
MOISTURE RESISTANCE OR WATER VAPOR PERMEABILITY	Absorbant
DENSITY	Approximately 32 Lb per Cubic Foot
COMPRESSIVE STRENGTH Specimen 6" x 6" x 2" Load Rate 0.10 Per Min.	———
RESISTANCE TO HANDLING BREAKAGE	———
DIMENSIONS	———

DUP 0920551

DU 033947

FLAME SPREAD RATING	
SPECIFICATIONS, QUALIFICATIONS, LIMITATIONS	Do not apply to surfaces while above 140F. Protect from rain or freezing for a minimum of two hours after application. Shelf life approximately 90 days.
APPROVED MATERIALS & VENDORS	Armatemp No. 10 (AC and S, Inc.) Eagle-Picher One-Cote (Eagle-Picher Sales Company) Super Powerhouse Cement (Keene Corporation) Insulating & Finishing Cement No. 375 (Johns-Manville Sales Corporation) Insulating and Finishing Cement MW1 (The Celotex Corporation) Delta Maid One Shot (Rock Wool Manufacturing Company) Thermokote 1 (Ryder Industries, Inc.)
NOTES:	1. Contact vendor for higher temperature range.

DUP 0920552

CLASSIFICATION	Fluid and Plastic Insulation
SPEC. NUMBER	SN 500 M
MATERIAL CODE	502.4
MATERIAL DESIGNATION	Insulating and Finishing Cement-Inhibited
PURPOSE	For pointing up irregular surfaces, filling joints and voids in insulation on austenitic stainless steel, acceptable on carbon steel substrates.
MATERIAL DESCRIPTION	Asbestos free, dry mixture containing mineral wool, a hydraulic setting binder and an inhibitor for prevention of chloride-stress corrosion cracking.
SUITABLE FOR USE:	
• On Unprotected Aluminum	No
• In direct contact with austenitic stainless steel at or above 140°F.	Yes
RECOMMENDED TEMP. RANGE	100F to 1 200F
K FACTOR BTU/(HR.)(SQ. FT.)(°F/IN.)	0.72 at 200F Mean 0.82 at 400F Mean 0.92 at 600F Mean
MOISTURE RESISTANCE OR WATER VAPOR PERMEABILITY	Absorbant
DENSITY	Approximately 30 Lb. Per Cubic Foot
COMPRESSIVE STRENGTH Specimen 6" x 6" x 2" Load Rate 0.10 Per Min.	
RESISTANCE TO HANDLING BREAKAGE	
DIMENSIONS	DUP 0920553

FLAME SPREAD RATING	
SPECIFICATIONS, QUALIFICATIONS, LIMITATIONS	Mix per manufacturer's instructions, using only potable water. Does not shrink, check or crack when mixed with approximately 12 gallons of water per 50 pounds. Remains workable for approximately two hours. Sets up within a few hours after application.
APPROVED MATERIALS & VENDORS	Pabco Asbestos Free-127 Cement (Fibreboard Corp.)
NOTES:	

DUP 0920554

CLASSIFICATION	Fluid and Plastic Insulation
SPEC. NUMBER	SN 500 M
MATERIAL CODE	503
MATERIAL DESIGNATION	Polyurethane, Foamed-in-Place, Poured
PURPOSE	To fill voids and inaccessible cavities
MATERIAL DESCRIPTION	Expanding rigid polyurethane foam produced by mixing two pourable liquids at atmospheric temperature in a ratio of 1 to 1 by weight.
SUITABLE FOR USE:	
• On Unprotected Aluminum	Yes
• In direct contact with austenitic stainless steel at or above 140°F.	No
RECOMMENDED TEMP. RANGE	-100F to +180F, Continuous Duty -100F to +250F, Intermittent Duty
K FACTOR BTU/(HR.)(SQ. FT.)(°F/IN.)	0.16 Max. at 75F Mean
MOISTURE RESISTANCE OR WATER VAPOR PERMEABILITY	Absorbant
DENSITY	1.8 to 2.2 Lb. Per Cubic Foot
COMPRESSIVE STRENGTH Specimen 6" x 6" x 2" Load Rate 0.10 Per Min.	35 psi min. at yield point parallel to rise.
RESISTANCE TO HANDLING BREAKAGE	Good
DIMENSIONS	DUP 0920555

FLAME SPREAD RATING	Installations must meet flame spread rating limitations given in SN-1-A.
SPECIFICATIONS, QUALIFICATIONS, LIMITATIONS	Mixing time 15 to 25 seconds. Foam time 2 to 4 minutes. Liquid to solid expansion ratio approximately 1 to 18. Store and use material at 70F to 90F to avoid deterioration. Natural ventilation required for work area. Heat equipment over three feet in diameter to 90F for optimum foam density and to avoid cracking. Flame spread rating (ASTM-E162) shall not exceed 60 when coated with insulation mastic, Code 734, 3/32 inch dry thickness reinforced by glass cloth, Code 710.
APPROVED MATERIALS & VENDORS	Vultaform 16-F-1402 (General Latex & Chemical Corp.)
NOTES:	

DUP 0920556

DU 033952

CLASSIFICATION	Fluid and Plastic Insulation
SPEC. NUMBER	SN 500 M
MATERIAL CODE	504
MATERIAL DESIGNATION	Polyurethane Foam, Rigid, Sprayed-in-Place
PURPOSE	To insulate exterior of vessels and equipment
MATERIAL DESCRIPTION	Expanded rigid polyurethane foam produced by mixing two liquids in a spray gun in a ratio by volume of 1 to 1 and applied to surfaces to be insulated at normal atmospheric conditions.
SUITABLE FOR USE:	
• On Unprotected Aluminum	Yes
• In direct contact with austenitic stainless steel at or above 140°F.	No
RECOMMENDED TEMP. RANGE	-100F to +200F, Continuous Duty
K FACTOR BTU/(HR.)(SQ. FT.)(°F/IN.)	0.13 at 50F Mean 0.15 at 75F Mean 0.16 at 100F Mean
MOISTURE RESISTANCE OR WATER VAPOR PERMEABILITY	Low Absorbtion
DENSITY	1.8 to 2.2 Lb. Per Cubic Foot
COMPRESSIVE STRENGTH Specimen 6" x 6" x 2" Load Rate 0.10 Per Min.	Minimum 24 psi parallel to rise at 10% deformation or yield whichever strain is arrived at first.
RESISTANCE TO HANDLING BREAKAGE	Good
DIMENSIONS	DUP 0920557

FLAME SPREAD RATING	Uncoated foamed product flame spread rating (ASTM E84) not to exceed 75.
SPECIFICATIONS, QUALIFICATIONS, LIMITATIONS	Uniform cell structure with max. 10% open cells. Substrate temperature during application 65F to 140F. Minimum cure time prior to application of weather/vapor barrier mastic four hours. The vapor barrier mastic should be applied within three days. Store unopened components at 75F max. to obtain six months shelf life. Application requires special surface preparation, application equipment and proper training and qualification of applicators. Protection from ultra-violet rays and moisture is required to prevent foamed surface from degrading.
APPROVED MATERIALS & VENDORS	SS-0450A/0450B (Witco Chemical, Isocyanate Div.) CPR-425 (Upjohn Co., CPR Div.) Polylite 34-733/34-843 (Reichhold Chem. Corp.) Pluracard S602 (BASF Wyandotte) Thanol R-350X (Jefferson Chem. Co.) Vultafoam XR-124 (General Latex & Chemical Co.) Urethane Spray Systems 302/100 (Owens-Corning Fiberglas Corp.)
NOTES:	

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DUP 0920558

DU 033954

CLASSIFICATION	Fluid and Plastic Insulation
SPEC. NUMBER	SN 500 M
MATERIAL CODE	508
MATERIAL DESIGNATION	Heat Transfer Cement - Water Soluable
PURPOSE	To conduct heat from a heat source to a surface to be heated.
MATERIAL DESCRIPTION	Mixture of powdered graphite and sodium silicate with a plasticizer.
SUITABLE FOR USE:	
* On Unprotected Aluminum	No
* In direct contact with austenitic stainless steel at or above 140°F.	Yes
RECOMMENDED TEMP. RANGE	375F to 750F
K FACTOR BTU/(HR.)(SQ. FT.)(°F/IN.)	40 at 60F
MOISTURE RESISTANCE OR WATER VAPOR PERMEABILITY	Absorbant
DENSITY	100 Lb. per Cubic Foot
COMPRESSIVE STRENGTH Specimen 6" x 6" x 2" Load Rate 0.10 Per Min.	1,100 psi minimum
RESISTANCE TO HANDLING BREAKAGE	———
DIMENSIONS	——— DUP 0920559

FLAME SPREAD RATING	
SPECIFICATIONS, QUALIFICATIONS, LIMITATIONS	Not an insulating material. Do not use on aluminum or galvanized substrates. Moisture deteriorates materials in both cured and uncured states.
APPROVED MATERIALS & VENDORS	~~Tracit 300 (Chemax Corporation)~~ ~~Standard Thermon (Thermon Manufacturing Company)~~ ~~Zeston Z-10 (Johns-Manville Sales Corporation)~~
NOTES:	

DUP 0920560

DU 033956

CLASSIFICATION	Fluid and Plastic Insulation
SPEC. NUMBER	SN 500 M
MATERIAL CODE	509
MATERIAL DESIGNATION	Heat Transfer Cement - Waterproof
PURPOSE	To conduct heat from a source to a surface to be heated.
MATERIAL DESCRIPTION	Mixture of powdered graphite and organic binder with a plasticizer. Thermosetting without noticeable shrinkage.
SUITABLE FOR USE:	
• On Unprotected Aluminum	Yes
• In direct contact with austenitic stainless steel at or above 140°F.	Yes
RECOMMENDED TEMP. RANGE	-100F to +375F
K FACTOR BTU/(HR.)(SQ. FT.)(°F/IN.)	6 Minimum at 60F
MOISTURE RESISTANCE OR WATER VAPOR PERMEABILITY	Nonabsorbant
DENSITY	100 Lbs. per Cubic Foot
COMPRESSIVE STRENGTH Specimen 6" x 6" x 2" Load Rate 0.10 Per Min.	1,100 psi Minimum
RESISTANCE TO HANDLING BREAKAGE	
DIMENSIONS	DUP 0920561