ECONOMY CORPORATION

INTER-OFFICE CORRESPONDENCE

PLAINTIFF'S EXHIBIT
MAR-565

TO: Jim Fuller

DATE: 9/2/77

FROM: Clarence Fennema

COPIES TO: See Distribution

LOCATION:

SUBJECT: ASBESTOS REPLACEMENT FOR FORD

Ford has authorized a fiber glass replacement for asbestos paper sheets and wants to get into it as soon as possible.

Jim Stewart has negotiated a date of November 1, 1977 latest for ISIR samples and January 2, 1978 latest for production shipments.

There is approximately a $ .10 savings each on the most popular 21.25 long mufflers, and almost $ .12 on the 24.5 long muffler (460 Ford).

However, there is a penalty of $.015 on each Pinto due to the single layer of asbestos now used.

If agreeable to all, the following program is being planned:

1. 100 sheets of the single sheet, 65 lb., Riegel's - "Acousta Therm 650" will be sent in on a sample basis within the next 2 weeks. The sheets will be 25" x 23" so we can make correct size for any of the 9 muffler part numbers as they come up for production.

2. As mufflers come up for production we will insert the fiber glass and get an ISIR approval from Ford.

3. We should order 5,000 - 25 x 16.5
   5,000 - 25 x 23
   and 24,000 - 25 x 19.75 sheets which is one months supply (according to J. Hill) of each requirement soon. I understand we can get these within a few weeks of ordering.

   If delivered by middle of October we may be able to phase out asbestos in Ford mufflers - without losses - by end of November latest.

4. We should explore phasing out asbestos in the aftermarket area as well but there will not be a savings unless we use a different weight material like 450 which Jerry Constable may wish to pursue.

ASBESTOS REPLACEMENT FOR FORD (cont.)

CONCLUSION -

I am personally moving ahead on Item 1 and 2 which will of course involve Bob Moss.

The other items are recommendations to be carried through by Production Control and Purchasing.

C. Fennema

CF/mbs

Distribution:

J. Constable
J. Hill
B. Moss
C. Wilson
J. Nettle
D. Laughlin
T. Watkins
J. Stewart
D. Strolle
A. DeSollar
T. Downing

[illegible] CORPORATION — ENGINEERING CHANGE ORDER — E.C.O. NO. 17950

EXHAUST SYSTEM DIVISION — DATE: 10/12/77 — SHEET 1 OF 2

ECO TYPE	LINE	PART TYPE	REASON FOR CHANGE	ATTACHMENTS
☐ PROPOSAL	☐ MAREMONT	☐ EXHAUST PIPE ☐ TAILPIPE	☒ NEW CATALOG ITEM	☐ MAINTENANCE
☒ RELEASE	☐ AUTOBRANDS	☐ MUFFLER ☐ HANGER	☐ CATALOG CORRECTION	☐ CATALOG SPECS
☐ W/COST	☐ WORLD PARTS	☐ FLANGE ☐ GASKET	☐ SUPERSEDURE	☒ PART DRAWINGS
☒ W/O COST	☐ SEARS	☐ WELDED ASSEMBLY	☐ REVISION OF SPECS	☐ PROCESS CARDS
	☐ ALL	☐ ACCESSORY	☐ CONSOLIDATION	☐ SUPERSEDURE
	☒ OEM	OTHER: Fiberglass insulation Chart.	☐ REDESIGN	☐ CONSOLIDATION
			☐ M-C/O ☐ A-C/O	☐ SKETCH ☐ RFA
PRODUCT CODE:			OTHER:	☐ VECTOR DATA
				OTHER:

INITIATING DATA: FORD REQUEST TO ADD FIBERGLASS OPTION TO PRODUCTION PARTS.

AFFECTED PART NOS.: New part numbers, 32-4000 Chart.

DESCRIPTION OF CHANGES: Release new 32-Chart indicating fiberglass insulation specifications for Ford OEM Mufflers. See Sheet 2 for details.

PROD. ENG.

TAGGED SAMPLE: YES ☐ NO ☒ DATED:

SAMPLE TYPE: OEM ☐ COMP. ☐ MM ☐

SHIP SAMPLE TO:

PURCHASED COMPONENTS:

PRODUCT CHECK REQUIRED: YES ☐ NO ☐

PRODUCT WEIGHT (LBS): (EST./ACTUAL)

PREVIOUS ECO'S AFFECTED: NONE

PRODUCT ENGINEERING CONSIDERATIONS

The fiberglass released herein will be used on 1978 production Ford products.

DISPOSITION OF STOCK:

REVIEWED BY: [illegible] DATE:

MKTG.

AFFECTED OEM NOS.:

REGISTRATIONS: POP. CODE:

INITIAL BUILD:

ANNUAL SALES:

PRIOR YEAR COVERAGE:

PREVIOUS ECO'S AFFECTED:

MARKETING/CATALOGING CONSIDERATIONS

REVIEWED BY: DATE:

MFG.

PRODUCTION, INVENTORY, COST, TOOLING AND EQUIPMENT CONSIDERATIONS:

REVIEWED BY: DATE:

PURCH.

AVAILABILITY, COST, TOOLING AND EQUIPMENT CONSIDERATIONS:

REVIEWED BY: DATE:

COST

ESTIMATED ANNUAL SAVINGS OR COST:

REVIEWED BY: DATE:

APPROVALS	MANUFACTURING	MARKETING	PRODUCT ENG.
SIGNATURE			[signature]
DATE			10/13/77

MAREMT00007

This ECO releases 32-4000 Chart with the following part numbers for 4.5 x 11.0 mufflers:

32-4000	=	25.0 x 19.75	size
32-4001	=	25.0 x 23.00	size
32-4002	=	25.0 x 16.50	size

All sheets will have constant 25.0 width for 4.5 x 11.0 mufflers. Sheet length will be equal to muffler body length minus 1.5 inches.

Fiberglass must be specified as a 65 pound basis weight meeting Ford Specification ESA-M 99 G 126-A.

Chart will show approved vendors as Riegle Products and Hollingsworth & Vose.

GENERAL LABORATORY SERVICES

GENERAL SERVICES

LABORATORY INVESTIGATION REPORT

NUMBER 7099[illegible]

TO: A. J. [illegible] October 14, 1[illegible]7

SUBJECT: Heat Absorbing Insulator

SUPPLIERS: 1. Hollingsworth & Vose Company 2. Riegel Products

OBJECT: Test submitted heat insulating materials to specification [illegible]

CONCLUSION: Submitted material by Riegel Products conformed to the tested requirements of the above specification. Hollingsworth & Vose Company "Novomat 00[illegible]" [illegible] compliance with the above specification while "0140" and "0100" failed [illegible] same criteria as noted below by *.

TEST DATA:

Sample Identification	Riegel	Novomat 0140	Novomat 0100	Novomat 0065	Specification
Tensile Strength					
a. MD	7[illegible]	252.1	122.7	90.6	62.5kg/m min
b. CMD	47.8	127.1	97.4	66.4	44.6kg/m min
Basis Weight	0.124	0.245	0.161	0.105	0.095kg/m^2 min
Thickness	1.02	*2.31	*1.47	1.09	0.91mm min 1.40mm max
Combustible Material	4.0%	4.3%	4.3%	3.5%	2% min - 5% max

Fiber Diameters and Fiber Length: Unable to ascertain due to tightness of weave and fiber-splitting tendency during repeated attempts at segregating individual samples.

By [signature]
J. E. Mitchell, Jr.

CONCUR: [signature]
J. R. [illegible], Supervisor
Non-Metals Section

L. T. Dixon, Manager
Chemistry Department

JEM/[illegible]

[illegible] 16011-2

MAREMT00009

MATERIAL NAME	MATERIAL NO.
INSULATOR - HEAT ABSORBING - GLASS FIBER WRAP	ESA-M99G126-A

DATE	LET.	REVISIONS	DR.	CK.	ENGR. APPR.	SHEET NO.
8-9-77		RELEASED CAG2-761416-C4	Fn	KSR	[signature] 8/3/77	1
					APPROVED BY [signature] 8-3-77	OF
						2

NO. ESA-M99G126-A

1. SCOPE: The material defined by this specification is a glass fiber wrap.

2. APPLICATION: This material was originally released as a wrap for use between the shell and cover in muffler applications.

3. REQUIREMENTS:

3.1 Composition:

3.1.1 Glass: Borosilicate ("E" Glass)

3.1.2 Binder: Polyvinyl Alcohol, dispersed so as to eliminate loose fibers on either surface of material.

3.2 Tensile Strength kg/m min:
(ASTM D 828 with 25.4 mm sample width)

3.2.1 DE65, kg/m min:	Machine Direction	62.5	3.5 lbs/in
	Cross Machine Direction	44.6	2.5 lbs/in

3.3 Basis Weight:
(ASTM D 646)

3.3.1 DE65: kg/m^2 min	0.095	58.36#/3

3.4 Thickness:

Test Method: ASTM D 645 with following modifications: (1) use of motorized test apparatus, (2) 645 square mm round anvil and pressure foot, pressure 3.4 KPa, (3) within any 7740 square mm sample area the average of ID measurements shall conform to the thickness specification.

	Min.	Max.
3.4.1 DE65: mm	0.91	1.40
		1.65

Ford Motor Company

ENG STAFF MAR 70 3940 K&E 16H Ford Motor Company

MAREMT00011

INSULATOR - HEAT ABSORBING - GLASS FIBER WRAP

MATERIAL NO. ESA-M99G126-A

DATE	LET.	REVISIONS	DR.	CK.	ENGR. APPR.	SHEET NO.
		RELEASED CAG2-761416-C4	FM	K.G.	[illegible]	2
					APPROVED BY [illegible]	OF
						2

NO. ESA-M99G126-A

3.5 Miscellaneous Physical Properties:

	Min.	Max.
3.5.1 Fiber Diameters: 10^{-3} mm	5.08	7.62
3.5.2 Fiber Length: mm	6.35	12.7
3.5.3 Combustible Material:	2%	5%

3.6 Supplier Responsibility: Material supplied to this specification must be equivalent to that originally approved. Prior to making any changes in composition or processing the supplier shall advise Purchasing and obtain approval for the changes from the affected Product Engineering Materials Department.

4. APPROVAL OF SUPPLIER: Suppliers to this specification must be approved by the affected Product Engineering Office. Those desiring approval should obtain an expression of interest from Purchasing and then contact the affected Materials Engineering Department for the approval procedure.

CHEVROLET MOTOR DIVISION
GENERAL MOTORS CORPORATION

GLASS FIBER INSULATION SHEET

SCOPE: THIS SPECIFICATION DEFINES THE PHYSICAL PROPERTIES OF A GLASS FIBER INSULATION SHEET. ALSO, HOW ADDITIONAL SOURCES OF SUPPLY CAN BE APPROVED.

APPLICATION: EXHAUST MUFFLER INSULATION.

LIMITATIONS: NOT TO BE EXPOSED TO AIR FLOW AND/OR WATER.

MATERIAL SPECIFICATION:

MATERIAL: CMZ AA036AA (UMC 35110)
SHEET-GLASS FIBER INSULATION
COLOR: NATURAL
GENERAL DESCRIPTION: THIS GLASS FIBER MAT SHEET HAS A BUMPY STUCCO LIKE FINISH ON ONE SURFACE AND A SMOOTH SURFACE ON THE OTHER. THE MAT HAS A WHITE COLOR AND IS COMPOSED OF A MINIMUM OF 94 PERCENT GLASS FIBERS AND A MAXIMUM OF 6 PERCENT ORGANIC BINDER. BINDER MUST BE UNIFORMALLY DISPERSED SO AS TO ELIMINATE LOOSE FIBERS ON EITHER SURFACE.

H	H	PHYSICAL PROPERTIES	ASTM	TYPE I	TYPE II
6070	92-107	WEIGHT, g/m^2 (lbs/100ft^2)	D646	98-114(2.00-2.33)	151-174(3.10-3.56)
		*THICKNESS,mm (INCH)	D645	1.27-1.52(.05-.06)	2.67-2.92(.105-.115)
		GLASS FIBER CONTENT,%	D2584	94 minimum	94 minimum
		FIBER DIAMETER, um		5.08-7.62	5.08-7.62
		FIBER LENGTH,mm(INCH)		6.35-12.70(.25-.50)	6.35-12.70(.25-.50)
		BINDER CONTENT, %	D2584	4 to 6	4 to 6
		TENSILE STRENGTH (DRY) N/m (Lbs/Inch)	D828		
		MACHINE DIRECTION:		700 (4.0) MIN.	875 (5.0) MIN.
		CROSS MACHINE DIRECTION:		525 (3.0) MIN.	700 (4.0) MIN.

* TEST WITH SMOOTH SIDE OF SHEET UP, USING A 645 mm^2 (1.0 in.^{2}) ROUND PRESSURE FOOT OF 2N (0.5 POUND).

These specifications were developed without considering whether patents may or may not be involved. In all cases, therefore, the supplier shall be required to assure patent liability.

DATE	SYM	REVISION RECORD	AUTH	DR	APR
9-15-77					
6-6-78		Retyped & reissued			

DATE 9-14-77 DR APR R.D. GERVAI
REF SHEET 1 OF 2
NAME SHEET-GLASS FIBER INSULATION
CMZ ZZ036AA
NO CMZ ZZ036 SUFFIX AA
PAGE

CHEVROLET MOTOR DIVISION
GENERAL MOTORS CORPORATION
These specifications were developed without considering whether patents may or may not be involved. In all cases, therefore, the supplier shall be required to assume patent liability

APPROVED GLASS FIBER MAT:

1. RIEGAL PRODUCTS CORP. - ACOUSTA - THERM 65D FOR TYPE I
   ACOUSTA - THERM 100D FOR TYPE II

2. HOLLINGSWORTH & VOSE - HOVOMAT - EX-0065 FOR TYPE I
   HOVOMAT - EX-0100 FOR TYPE II

ADDITIONAL GLASS FIBER MAT SHEET MATERIAL WILL BE APPROVED BY CHEVROLET ENGINEERING FOLLOWING:

1. SATISFACTORY EVIDENCE OF CONFORMANCE TO THIS SPECIFICATION.
2. SATISFACTORY EVALUATION OF ASSEMBLY PROCESSING BY MUFFLER MANUFACTURE.
3. SATISFACTORY EVALUATION OF TEST DATE AND PARTS TESTED AT 649°C(1200°F) EXHAUST INLET GAS TEMPERATURE, FOR A MINIMUM OF 2 HRS., BY THE MUFFLER MFG.

DATE	SYM	REVISION RECORD	AUTH	DR	APR
9-15-77					
6-6-78		Retyped & reissued			

DATE	DR	APR
9-14-77		R.D. GERVAIS

REF

SHEET 2 OF 2

NAME SHEET-GLASS FIBER INSULATION
CMZ ZZ036AA

NO. CMZ ZZ036

SUFFIX AA

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