

ASSESSMENT OF ASBESTOS USE AND IMPENDING REGULATIONS

Vehicle Materials Development and Planning
August, 1979

8001 1288

SCF-ALLF-07780

Purpose

To review and update the engineering asbestos plan.

Background

The 1975 OSHA proposed standard remains dormant. If promulgated it will lower the permissible occupational exposure limit for asbestos from the current 2 fibers per cubic centimeter to 0.5 fiber/cc. Formal hearings that normally precede issuance of a final standard have been delayed for several reasons:

- . A standard for the construction industry has not been prepared.
- . An economic impact study has not been released, although it has been in draft form for six months.
- . Continued attack on the proposed standard by asbestos and mining interests as being too restrictive.

Contrary to this apparent inactivity, NIOSH has recommended documentation of the "life cycle" of asbestos from mining to disposal and elimination of all non-essential uses. A working group in EPA's Office of Toxic Substance is currently performing a "life cycle" analysis of asbestos. First priorities for regulation are paper products (gaskets) and friction materials (brakes).

Assessment

(study of the current regulatory situation indicates a high probability that tighter environmental restrictions on asbestos will be promulgated within the next two years. The fact no firm evidence exists that the current standard is inadequate only means there will be no emergency standard of a disruptive nature. Evaluation of the current standard could take 30 or 40 years and still not surface concrete evidence supporting either the government or industry position. The burden is clearly on industry to "prove" the current standard is adequate. Since this is not possible and the government agencies were created to regulate the use of materials, we must proceed on the assumption there will be further regulation of asbestos.

The previous scenario for a staged tightening remains a possibility. This would mean a reduction of the current standard to 1 fiber/cc by mid-1980 and 0.5 fiber/cc by early 1983. However, this timing is unlikely because most industry currently meets 1 fiber/cc and the proposed standard has been "on-the-books" for nearly four years with no action.

If, as expected, during the next two years the proposed OSHA standard is promulgated, and/or regulation by EPA of asbestos emissions from brake wear occurs, then the following results can be expected:

A. A drastic reduction in the use of asbestos containing friction materials over the next 3 to 5 years. Comments:

- . Court challenges will delay implementation of standards for at least 1 year.
- . Transmission and Axle programs will be accelerated for non-asbestos substitution. (Attachment I)
- . Costly "crash programs" for brake drum substitutions.
- * . Attachment II shows the company usage of asbestos containing friction materials.

* General list being compiled by VMD&P- additional input required from PEO's for completion

B. The use of asbestos containing gasket materials will remain cost-effective for most applications. Comments:

- . Raw asbestos comes from Canada,
- . Process areas meet 0.5 fiber/cc by encapsulation.
- . No emission problem because of encapsulation (with the possible exception of disposal).
- *. Attachment III shows the company usage of asbestos containing gasket and insulating materials.

It is less likely that we will see a standard of 0.1 fiber/cc. Streets in major cities have been measured at levels higher than 0.1 fiber/cc and citing this level as dangerous could result in "public panic".

Competition

Several years ago, GM reportedly considered a policy to get asbestos out of the brake linings because of the toxic concerns. They decided that the effort to find a substitute for asbestos would be better spent to improve the performance and durability of the lining material and opted for a development program with semi-mets by '81-'82 and all linings (disc and drum) by '85. The asbestos issue has helped keep the semi-met programs going over the years. There is no "official" GM company policy to remove asbestos from other component areas. However, because of toxic concerns and company awareness of asbestos, gaskets and heat insulators are slowly being replaced with asbestos free materials. Asbestos insulation reportedly has been removed from manufacturing plants and the facilities that manufacture brake linings meet the present standard of 2 fiber/cc. It appears obvious, regardless of company policy, that GM intends to eliminate the use of asbestos. Their approach of "no formal policy" is a result of uncertainties associated with cost and timing for substitutions, and a general awareness that issues must be dealt with before they become problems.

Chrysler also has no formal program for asbestos removal. However, in the case of sealers and gaskets, they attempt to use non-asbestos materials wherever possible and in most cases, are now introducing the substitute materials. In the area of brakes, front wheel discs are being converted to semi-mets as new programs permit, but no plan exists for rear brake drum substitution.

Summary

It is unlikely that crash programs on some friction materials can be avoided when tighter standards are promulgated for the following reasons:

- . Reportedly there are no asbestos free substitute materials for drum brake linings available for evaluation at this time.
- . Despite the lead body solder fiasco, the engineering attitude (with the exception of Transmission and Axle) remains "wait until the standard is promulgated". (Questions have been raised by various PEO's regarding a policy or position for the use of asbestos. In the absence of other direction, VMD&P makes recommendations later in this paper for a specific asbestos policy.)
- . The automotive industry has not shown sufficient interest in non-asbestos materials to warrant accelerated R&D efforts by suppliers.

* General list being compiled by VMD&P - additional input required from PEO's for completion

Summary (continued)

Asbestos containing gasket materials will remain cost-effective this time around. However, the ultimate goal of NIOSH is to ban the use of asbestos, which means regulatory pressures will continue for many years to come. If we do not begin a serious effort to develop non-asbestos substitutes, additional "crash programs" can be expected.

Recommendations

The above assessments raise questions about company response to impending government regulations for environmental exposure to asbestos. In order to minimize the economic and timing impacts of these regulations, the Company must increase response in the following areas:

1. Initiate Advanced Engineering projects in the PEO's to develop alternate materials for friction, gasket and insulating components that contain asbestos. The October 7, 1978 Transmission and Axle Engineering Non-asbestos Material Program (Attachment I) is an excellent example. The suppliers must be made aware that we are seriously interested in alternate materials so that they will expend the necessary R&D efforts. Additional manpower will be necessary to assist the already over burdened PEO's. Responsibility: PEO's (Advanced Engineering)
2. It will be necessary to increase the capability of the Friction Materials Study Group within Research Staff to provide parallel support for engineering projects. Responsibility: E&RS
3. A firm company policy must be adopted for asbestos usage. Attached is a Car Engineering Practice Letter signed by the Vice President, Car Engineering (Attachment IV). Responsibility: VMD&P
4. Because of the lack of a formal mechanism to follow progress in this area, periodic reports must be made to management via the Engineering and Research Subcommittee. Responsibility: PEO's (Advanced Engineering)

Vehicle Materials Development and Planning

August, 1979

8001 1291

**TRANSMISSION AND AXLE ENGINEERING
NON-ASBESTOS MATERIAL PROGRAM**

- **Objective:** To develop non-asbestos material components to replace these items currently released which contain asbestos.
- **Justification:** Manufacturing controls necessitated by anticipated OSHA standards to control carcinogenic materials will virtually eliminate asbestos usage in the automotive industry.

For automatic transmissions, the initial development effort to evaluate non-asbestos friction materials is being conducted with the O6 transmission; initial production incorporation is scheduled for Oct 1, 1981. As final material selections are made for individual friction elements, the other automatic transmission groups will determine their requirements based on the O6 experience.

The asbestos reinforced phenolic reactore will continue phasing out in 1980 and be completely phased out by Oct 1, 1982.

Due to limited production capability by the prime supplier, asbestos-reinforced manual transmission shift forks will continue initial clutch development on the 1st 1st clutch for Oct 1, 1981 and phase the 1st clutch out by Oct 1, 1982.

The 1st clutch development effort will continue to be a high priority item and will be completed by Oct 1, 1981. The 1st clutch development effort will be a high priority item and will be completed by Oct 1, 1981.

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Transmission and Axle Engineering
October 7, 1980

8001 1292

PQ

TRANSMISSION AND AXLE ENGINEERING
NON-ASBESTOS MATERIALS PROGRAM

10/7/8

	C4	C6	FXE	G1	JATCO	F10D	LTX	F20D II	MANUAL	AXLE
Direct Clutch	S-7018-X10 SD-715AA Incorporation Job #1, 1981 Part of C4 Engagement Improvement Prog.	S-7018-X10 Incorporation Job #1, 1980 Limited Models	Out in 1981 No Action Planned	Design trans- mittal going to ERO stating this to be Job #1, 1982 Program	Out in 1981 No action Planned	S-7049-X28 Prime SD-714-AAB Alternate Running Change 1981	S-7049-X13 Job #1, 1981	Programmed 100% for Non-Asbestos selection of material to be based on results obtained by produc- tion transmission which by Job #1, 1983 will have 3 years experience.		
Forward Clutch	S-7049-X13 SD-715-AAB Incorporation (Same as above)	S-7049-X13 Incorporation Job #1, 1980 Limited Models				SD-715-AAB Running Change 1981				
Intermediate Clutch						S-7049-X12 Prime SD-715-AAB Alt. Running Change 1981	S-7049-X13 Job #1, 1981			
Reverse Clutch		SD-715-AAB Incorporation Job #1, 1980 Limited Models				SD-714-AAB Running Change 1981	S-7049-X13 Job #1, 1981			
Intermediate Band	SD-1473 Incorporation Job #1, 1982	SD-1473 Incorporation Job #1, 1980 Limited Models					SD-1181 Job #1, 1981			
O/D Band						SD-1473 Running Change 1981				
Reverse Band	Material determination not complete Incorporation planned for Job #1, 1982					S-7049-X10 Prime SD-1777 Alt. Running Change 1981				
Phenolic Reactor	Phased out Job #1, 1980	Phased out Job #1, 1981	Phased out Job #1, 1980							
Phenolic Washer	Asbestos Reinforced will be phased out as running change 1980									
Damper						Material TED Job #1, 1981	Material TED Job #1, 1981			
L/V Conv. Shoes/ Damper	Material being determined for Job #1, 1982 Release									
Clutch Disc										
Gaskets and Locker Plates										
Cuts:	SD - Borg-Warner Spring Division S - Raybestos-Manhattan									

3-1/16" Dia. Job #1, 1980
84" Dia. by Job #1, 1981

Metal friction disc
for 3.5" in '80, and
7.5" in '81. Non-
asbestos material
TED on 9" axles by
1981.

8001 1293

ASBESTOS USE IN FRICTION MATERIALS

<u>Friction Materials</u>	<u>Design Responsibility</u>	<u>Basic Component Part Number(s)</u>	<u>Specification(s)</u>	<u>Supplier(s)</u>	<u>Alternative - Status</u>
Primary lining rear drum brakes.	Chassis	2284	ES-Part Number (numerous)	Bendix Kelsey-Hayes Wagner Electric Raybestos Thickol Theroid ABEX	• NO substitute for drum brakes. • Bendix and ABEX claim they will submit alternates in the 4th quarter 1979 for evaluation. • NO substitute for semi-metallic disc brake backing. • Bendix claims substitute. • NO plan exists to phase out asbestos from brakes.
Secondary lining rear drum brakes.	Chassis	2285			
Outer disc front brakes.	Chassis	2021			
Inner disc front brakes.	Chassis	2022			
Converter reactor.	Trans. & Axle	7934 7937	ESV-MJ0117-A	Chicago Molded Diecasting Plastic Moldings Hocker-Dures (Fab) Rogers (Fab)	• Return to aluminum for performance. • 200,000 lbs. of Hocker-Dures 23639 stock piled for Ford phase out.
Thrust washer on/b. trans.	Trans. & Axle	7936 7937	ESV-MJ081-A ESV-MJ097-A ESV-MJ0108-A	Hocker-Dures (Canadian) Union Carbide	• ESV-MJ0119-A replaces ESV-MJ081-A supplied by Waplex. • Hocker-Dures supply from Canada.
Shod Assembly	Trans. & Axle	7A176 7D095 7D034 7A162	Part Number (numerous)	Spring Brummer Kelsey-Hayes Raybestos	• Active program to find substitutes created by Pado letter. • 1980 Mustang/Capri 3.3L/380D clutch disc, easy, contains non-asbestos substitutes. • 1980 Econoline C6 transmission, contains non-asbestos substitutes. • FI00-II will probably be asbestos free. • ATI will have some non-asbestos substitutes. • Raybestos policy is to get out of asbestos by 1982 will push efforts for non-asbestos substitution.
Plate Assembly (trans.)	Trans. & Axle	7E312 7E311 7B164 7E313 7E319		Spring Brummer Raybestos	
Clutch disc assy. friction facings.	Trans. & Axle	7450 7449		Borg & Beck Luh Alum Theroid Porter (Fab) Raybestos (Fab)	
Plate Assembly (axle)	Trans. & Axle	4147 41325		Spring Brummer Raybestos	

R001 1294

Vehicle Materials Engineering
August 1, 1979

ATTACHMENT II

ASBESTOS USE IN GASKETS & INSULATORS

<u>Engine Materials</u>	<u>Design Responsibility</u>	<u>Basic Component Part Number(s)</u>	<u>Specification(s)</u>	<u>Supplier(s)</u>	<u>Alternative - Status</u>
Cylinder head	Engine	6051	ESE-M8072-L ESE-M8073-A ESE-M80108-A	Victor Detroit Raybestos (Fab)	None - no known R & D
Exhaust manifold	Engine Chassis	9448 9451	ESE-M80149-A	Victor	None - no known R & D
Intake manifold Manifold cover Thermostat choke	Engine	9439 9448 9474 9993 9461 9436 9437 9438	ESV-M8055-A ESE-M8062-A ESA-M8094-A ESE-M80124-A ESE-M80144-A1, A2	Victor Detroit Nicolet Crotty McCord Felt Products Latex Fiber (Fab) Raybestos (Fab) Armstrong (Fab) Rogers Corp. (Fab)	None - Rogers Corp. Asbestos available for testing to replace Armstrong AE-890; cost penalty 25-50%. - Armstrong Cork Thermostats available for testing on part for part substitution only; cost penalty 200-300%.
Carburetor to manifold	Engine	9447	ESE-M8063-A ESE-M80106-B ESE-M80137-A ESE-M80143-A ESE-M80150-A	Nicolet Volverise Crotty Detroit F. S. Varnum Raybestos (Fab)	None - Rogers Corp. Asbestos - Armstrong Cork Thermostats
Compressor to block	Engine	2946		Victor	
Oil pan Oil pump	Engine		ESE-M801-A	Detroit Victor Nicolet	
Front cover	Engine	6020	ESV-M8055-A	Crotty Armstrong (Fab) Latex Fiber (Fab)	
Water pump and cover Water outlet connection	Engine	8507 8513 8255	ESV-M80109-A	Crotty Volverise Rogers Corp. (Fab)	

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ATTACHMENT III

<u>Required Materials</u>	<u>Design Responsibility</u>	<u>Basic Component Part Number(s)</u>	<u>Specifications</u>	<u>Supplier(s)</u>	<u>Alternative - Status</u>
Fuel pump		9417		Crotty Quality	
Carburetor choke housing cover	Engine		ESV-M8065-A	Victor Wolverine Federal-Mogul	
Carburetor power valve	Engine		ESV-M8055-A	Armstrong (Fab) Latex Fiber (Fab)	
Seal for rear main cap	Engine		ESE-M8059-A	Raybestos (Fab)	
EGR valve Various high temp.	Engine		ESE-M80106-A ESE-M80106-B ESE-M80150-A	Raybestos (Fab) Nicolet	
Converter seal	Engine		ESE-M80138-A1, A2, B1, B2	Raybestos (Fab) M Industrial	
Seat belt anchor insulator	BEPE	5460122 6260122 6660122	ESB-M80145-A	F. D. Farnum Banks Bros.	
Sealer for studs, plugs, joints, etc.	Engine, Chassis	8005	ESE-M80113-A ESE-M80115-A ESE-M80116-A	P.O.B. Mfg. Permatex Pierce & Stevens	
Insulator between floor pan and Exhaust system	ESV		ESB-M2257-A ESB-M2257-B	O.A.F. Corp. Paragon Phillip Carey	
Axle housing cover	1. & Axle		ESV-M80109-B	Crotty Wolverine Rogers Corporation (Fab)	
V/Vpr motor seal	EED	170430	ESV-M80109-B	Rogers Corporation (Fab) Wolverine	
Heat shield exhaust system	Chassis		ESA-M80147-A	Garlock	
Brake vacuum pump mount	Chassis	20885	ESE-M801-A	Detroit Victor Nicolet	
Compressor air brake		2946			

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<u>Chassis Materials</u>	<u>Design Responsibility</u>	<u>Engine Component Part Number(s)</u>	<u>Specification(s)</u>	<u>Supplier(s)</u>	<u>Alternative Status</u>
Oil filter by-pass V/V cut W/Vyr gear cut	Engine	6669 17A529	ESE-M801-A	Detroit Victor Nicolet	
Water temp. SW Electrical control	Engine	10914 12A696	ESE-M8055-A	Crotty Armstrong (Fab) Latex Fiber (Fab)	
Oil fill housing to pan	Engine	6753	ESE-M8062-A	Crotty Armstrong (Fab) Latex Fiber (Fab)	
Lower arm ball joint A/C compressor head	Engine CCD	3A472 19D871	ESE-M8065-A ESE-M80109-B ESE-M8065-A	Federal Mogul Victor Wolverine Crotty	
Crankshaft rear oil	Engine	6701	ESE-M8087-A	Copeland Gibson	
Resonator Assembly	Chassis	5B266	ESE-M80106-A ESE-M80106-B ESA-M80140-A	Raybestos Nicolet	
Window Regulator Yoke	EED	14A427	ESP-M80126-A	Armstrong (Fab) F.D. Farman	
General purpose	Engine	M80136	ESE-M80136-A	Latex Fiber	
Parking brake insulator	Chassis	2B608	ESA-M80140-A	Raybestos	
Starter motor brush holder	EED	11062	ESP-M3L56-A	Norplex	Non-asbestos substitute being purchased under a deviation on ESP-M3L56-A

8001 1297

Vehicle Materials Engineering
August, 1979

ASBESTOS USE IN ADHESIVES, SEALERS AND DEADENERS

<u>Materials</u>	<u>Design Responsibility</u>	<u>Specifications</u>	<u>Supplier(s)</u>	<u>Alternative Status</u>
Adhesives	Engine	ESE-M2G51-A	3M	TBD
	BEPE	ESB-M2G58-C	Protective Treatment	
	BEPE	ESB-M2G171-AB	Protective Treatment	
Sealers	BEPE	ESB-M4G1-B	Protective Treatment	TBD
	BEPE	ESB-M4G31-A	Inmont, Tremco	
	BEPE	ESB-M4G32-A	Chemical Sealing	
	BEPE	ESB-M4G40-A	Allied, Mortell	
	BEPE	ESB-M4G58-B	Mortell	
	BEPE	ESB-M4G101-B	Tuff-Kote	
	BEPE	ESB-M4G108-A	Inmont	
	BEPE	ESB-M4G109-A	Mortell	
	BEPE	ESB-M4G110-A	Inmont	
	Engine	ESE-M4G114-A	POB Sealants	
	Engine	ESE-M4G115-A	POB Sealants	
	Engine	ESE-M4G116-A	POB Sealants	
	BEPE	ESB-M4G126-B	Chemical Sealing	
	BEPE	ESB-M4G137-A,B	Mortell	
	BEPE	ESB-M4G139-B	Protective Treatment	
	BEPE	ESB-M4G141-A	Allied, Mortell	
	BEPE	ESB-M4G145-C	Union City	
	BEPE	ESB-M4G147-B	Protective Treatment	
	BEPE	ESB-M4G161-C	Union City	
	BEPE	ESB-M4G162-A	Protective Treatment	
	BEPE	ESB-M4G172-A	Tuff-Kote	
	BEPE	ESB-M4G174-A	Protective Treatment	
	BEPE	ESB-M4G177-B	Protective Treatment	
	BEPE	ESB-M4G197-A	Protective Treatment	
	BEPE	ESB-M4G198-A	Protective Treatment	
	BEPE	ESB-M4G198-C	Union City	
Deadeners	BEPE	ESB-M5G8-A	Tuff-Kote	TBD
	BEPE	ESB-M5G22-A	Mortell	
	BEPE	ESB-M4G25-A	Mortell	

RP01 1298

Vehicle Materials Engineering
August, 1979

INTRODUCTION TO FORD ENGINEERING MATERIAL SPECIFICATIONS

Material Classification and Specification Codification

Engineering Material Specifications (ES-M's) are used to define product materials released by Product Engineering Offices (PEO's) for use in Company products and/or for merchandising by Company activities.

ES-M's are prefaced with a three-letter designation, a feature which distinguishes them from other types of Company specifications. A typical material specification callout is written as follows: ESB-M4D240-A.

The first two letters are "ES" for "Engineering Specification". The third letter identifies the specific Product Engineering Office which originally wrote and released the specification. For example, the following codes currently are used:

ESA - Chassis Engineering	ESN/ - Ford Tractor Operations
ESB - Body & Electrical Engrg.	ESEN
ESE - Engine Engineering	ESP - Transmission & Axle Engrg.
ESF - Electrical & Electronics Div.	ESR - Ford Parts & Service Div.
ESH - Climate Control Div.	ESS - Engineering & Research Staff
ESL - Light Truck Engineering	EST - Heavy Truck Engineering

(Inquiries regarding specification content should be directed to the responsible materials engineering activity as identified on page 5.)

Following the three-letter prefix is the letter "M" for "Materials".

Next is a set of alpha-numeric symbols consisting of one or two digits plus a letter to indicate the major and sub-category of the material. For example in the "4D" category, "D" indicates "Rubber and Plastics". The "4" further identifies it as "Thermoplastic".

The next series of non-significant digits serves only to distinguish the subject specification from others in the same category.

The suffix identifies the "revision level" of the specification, the original normally carrying suffix "A". Subsequent revisions that include a new or a more restrictive requirement of such nature that formerly approved materials do not meet it are identified by a suffix advancement, normally to the "B" level, etc. However, a suffix-advanced specification does not necessarily obsolete or replace the preceding suffix level. The specification number on the engineering drawing, complete with suffix, remains valid.

The occasional use of a digit following the suffix within a given specification number distinguishes between "types" of materials. These types are very similar to each other, but sufficiently different to require certain differences in property requirements.

The use of the inverted delta (∇) at the beginning of an ES-M number indicates extra controls of specific requirements which may affect compliance with certain government regulations. The specific requirements being controlled are identified by the ∇ preceding those requirements (See Quality Control Specification Q-101).

April 9, 1979

AB01 1299

Ford Motor Company encourages the "interdivisional" use of specifications, and while a prefix such as ESA shows that the specification was written and released originally by Chassis Engineering, there may be other users of the specification. In fact, the original releasing office may or may not continue to use it. Prefixes are not altered to reflect such occurrences, unless the suffix letter is also advanced to reflect more stringent or added requirements, in which case the specification becomes a "new" specification

An Engineering Specification is a performance specification for the part, is issued normally in conjunction with an engineering drawing, and is the responsibility of the affected design activity. A typical ES callout is written as follows: ES-D4AE-6015-A.

A Manufacturing Standard describes non-production materials - those which are used in manufacturing operations or maintenance but which do not become part of the vehicle. A typical Manufacturing Standard callout is written as follows: M-2C151(B). Manufacturing Standards have been available by subscription since 1952. Further details on that system are available from Manufacturing Engineering Evaluation and Standards Department (Address: See page 5).

Engineering Material Specifications and Manufacturing Standards share a common alpha numeric system of identification to identify the basic generic classifications of materials. Only the prefix letters are different. In sharing a common system, the non-significant digits following the generic classification are never duplicated.

Publication and Distribution of Engineering Material Specifications

ES-M's are available on a subscription basis. Under this system, currently active, new and revised specifications are distributed automatically to individuals/offices within Ford Motor Company and to suppliers whose names appear on the subscription system mailing list. Subscriptions are available at nominal cost to all suppliers. Inquiries regarding this service should be addressed to the Materials Engineering Department, Engineering & Research Staff (Address: See page 5). For those suppliers who do not choose to subscribe, individual copies also are available (no charge) at the same address.

Index of Active Specifications

An index is provided for each volume of active specifications. Included in the index is the latest revision date for each specification. In the absence of revisions, the original release date is taken as the latest revision date. Suppliers should use the index information to check the volumes for completeness and the individual specifications in each volume for currency. The responsibility for compliance with current specifications (latest revision date on page 1) rests with the supplier.

Additionally, the index indicates the product engineering office which has responsibility for the specifications by a capital letter code, and other product engineering offices using the specification by a lower case letter code. The letter codes used are:

A - Chassis Engineering	R - Ford Parts & Service Division
B - Body & Electrical Engineering	S - Engineering & Research Staff
E - Engine Engineering	T - Heavy Truck Engineering
F - Electrical & Electronics Division	W - Transmission
H - Climate Control Division	U - Ford do Brasil
L - Light Truck Engineering	Y - Ford of Europe
N - Ford Tractor Operations	Z - Ford of Australia
P - Transmission & Axle Engineering	2 - Engineering & Research Staff

April 9, 1979

RC01 1300

MATERIALS ENGINEERING ACTIVITY IDENTIFICATION & LOCATIONS

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All Other Materials
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FORD ENGINEERING MATERIAL SPECIFICATIONS

Vol. 1	1A	METALS - PART I Metals Ferrous	Vol. 13	1H 3H 4H 5H 6H 7H 8H	TEXTILES - PART I Textiles Carpets Curtain & Top Materials Headliners Tapes and Cords, Fabric Webbings Weatherstrips, Fabric Covered
Vol. 2	2A 4A 5A 6A 8A 10A 11A 12A	METALS - PART II Metals, Non-Ferrous Metals, Welding, Brazing & Fillers Wire, Spring Steel Metals, Electrical Metals, Bearing Powders, Metal Solders Lubricant, Solid Film	Vol. 14	9H 15H 16H 17H 99H	TEXTILES - PART II Fabrics, Backing Threads Felts Paddings Textiles, Misc
Vol. 3	1B 5B 6A 8E 11E 13E 17F 96B 97B 98B 99B	CHEMICALS Soaps Washer and Cleaner Compounds Fluids, Marking Alcohol & Antifreeze Compounds Polishing Compounds, Organic Finish Fluors Gases Ceramic Manufacturing Materials Chemicals, Organic Misc Chemicals, Inorganic Misc Chemical Compounds, Misc	Vol. 15	1J 2J 4J 6J	PAINTS - PART I Enamels, Air Dry Enamels, Air Dry - Exterior Quality Enamels, Air Dry - Interior Quality Enamel, Baking Enamel, Baking - Exterior Quality Enamel, Baking - Interior Quality Lacquers Lacquers - Exterior Quality Lacquers - Interior Quality Primers
Vol. 4	1C 2C 4C 6C 7C 9C 10C 99C	PETROLEUM PRODUCTS Grease, Lubricating Oil, Lubricating Fuel, Liquid Oils and Fluids, Hydraulic Rust Preventives Oils, Multiple Purpose Fluids, Test Petroleum Products, Misc	Vol. 16	7J 26J 32J 42J 50J 61J 62J 64J 70J 91J 96J 99J	PAINTS - PART II Shellacs, Varnishes & Stains Enamel, Vinyl Baking - Exterior Quality Enamel, Vinyl Baking - Interior Quality Enamel, Baking - Acrylic Enamel, Baking - Acrylic, Exterior Quality Enamel, Baking - Acrylic, Interior Quality Lacquers, Enamel Acrylic Paint - Non-Aqueous Dispersion Primers, Water Emulsion Paint - Water Emulsion Primer, Surface, Water Soluble Paint - 100% Non-Volatile Finishes - Heat Resistant Paint, Mig. Materials - Misc Coatings - Misc
Vol. 5	2D	RUBBER AND PLASTICS - PART I Rubber Compounds	Vol. 17	1L 2L 3L 4L 99L	ELECTRICAL Electrical Wire Assy - Multiple Electrical Wires, Single Electrical Insulating Materials Magnets, Permanent Electrical Materials Misc
Vol. 6	3D 4D	RUBBER AND PLASTICS - PART II Plastics, Thermoplastic Plastics, Thermoplastic	Vol. 18	1P 2P	PERFORMANCE SPECIFICATIONS - PART I Plating Painting
Vol. 7	4D (Cont'd) 6D 99D	RUBBER AND PLASTICS - PART III Plastics, Thermoplastic Assy., Thermoplastic Rubber & Plastics Misc	Vol. 19	3P 4P 5P 6P 7P 8P 9P 10P 11P 12P 13P 14P 15P 16P 17P 18P 19P 25P 99P	PERFORMANCE SPECIFICATIONS - PART II Phosphors Anodize Vacuum Melt Oxide Galvanize Fabrics Rubber Conversion Coatings Adhesives Ceramic Coatings Lubricants Cleaning Trim Assemblies Visual Boards & Appearance Standards Chemicals Sealers and Fillers Diffusion Coatings Regulatory Performance Misc. Performance Requirements
Vol. 8	1E 2E 3E 4E 99E	PAPER Papers Paperboards Paperboards, Pyroxylin or Vinyl Coated Papers, Electrical Paper Products Misc			
Vol. 9	1F 2F	LEATHER Leathers, Genuine Leathers, Artificial			
Vol. 10	2G 3G	NON METALLICS - PART I Adhesives Tapes, Adhesive			
Vol. 11	1G 4G 5G 10G 50G	NON METALLICS - PART II Bindings, Trim Sealers and Fillers Deadeners, Mastic Sound Antisqueak Materials Gaskets			
Vol. 12	6G 11G 12G 24G 29G 94G	NON METALLICS - PART III Waxes Woods Glass, Fiber Glass Products Non-Metallics Misc			

FD01 1302



Engineering Material Specification

Material Name

Specification Number

PHENOLIC MOLDING SHEET, ASBESTOS FIBER REINFORCED

F ESP-M3D53-A

1. SCOPE

The material defined by this specification is an asbestos fiber reinforced, molding material in sheet form. It contains a homogeneous blend of asbestos fibers and phenolic resins providing high heat resistance, dimensional stability, good strength and insulating qualities.

2. APPLICATION

This specification was released originally for material used as an insulator on electrical components such as generators and voltage regulators.

3. REQUIREMENTS

3.1 MOLDED PROPERTIES

3.1.1	Specific Gravity, min (ASTM D 792)	1.75
3.1.2	Tensile Strength, min (ASTM D 638, MD)	8500 psi (59 MPa)
3.1.3	Flexural Strength, min (ASTM D 790, MD)	16 000 psi (110 MPa)
3.1.4	Impact Strength, Izod, min (ASTM D 256, face)	2.0 ft lb/in (107 J/m)
3.1.5	Deflection Temperature, min (ASTM D 648, 66 psi (455 kPa))	260°C
3.1.6	Water Absorption, max (ASTM D 570)	0.6%
3.1.7	Hardness - Rockwell "M", min (ASTM D 785)	105
3.1.8	Dielectric Strength, min (ASTM D 149, short time)	350 V/mil (13.8 kV/mm)
3.1.9	Arc Resistance, min (ASTM D 495)	180 s

Date	Para. No.	Revisions
1978 03 09		Metricated and Retyped CF4H-RD567168.13
1963 06 28		Released F6-1076



3.2 MOLDED PARTS

Specific requirements for physical properties of molded parts, when required, shall be specified on engineering drawings.

3.3 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

R698A

ROGERS CORP.

RM 4100

ROGERS, CONN.

203-774-9605

1977 12 05

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June 77 3948-b

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8001 1304

JUN 21, 1979

PEO	MATERIAL	PREFIX	BASE	SUFFIX	MATERIAL CROSS REFERENCE - MATERIAL/PART NUMBER SEQ. FILE CONTROL NUMBER	DESCRIPTION	WEIGHT	PAGE 791 COMMENT
EED	ESFM3D31A	C3XF	10351 A		*D9L1302016 AGDB	HOLDER-ALTERNATOR BRUSH	.00	
DEPE	ESFM3D41A	D6TB	1360060 AA		*D9A1407002 EA	PLT FRT ST CSMN SCF	.03	
EED	ESFM3D43A	C70F	178563 A		*D9A1407006 NK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9A1407009 PK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9A1407011 ER	PIN W/WPR	.00	
EED	ESFM3D43A				*D9A1407017 PK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9A1407028 MK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9A1407032 NV	PIN W/WPR	.00	
EED	ESFM3D43A				*D9A1407308 NK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9A1407309 NK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9A1407310 KA	PIN W/WPR	.00	
EED	ESFM3D43A				*D9A1407311 KA	PIN W/WPR	.00	
EED	ESFM3D43A				*D9A1407312 NK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9A1407313 MK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407005 EK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407012 GU	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407013 GU	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407043 JM	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407124 A	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407287 MK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407288 MK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407289 MK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407290 MK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407291 MK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407292 GK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407293 GK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407294 GK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407295 GK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407296 GK	PIN W/WPR	.00	
EED	ESFM3D43A				*D9L1407298 KA	PIN W/WPR	.00	
EED	ESFM3D43A	C3XF	178564 A		*D9L1407113 LKHEF	PIN W/WPR	.00	
EED	ESFM3D43A		2900365		*D9L1407107 NNCS	WASHER	.00	
EED	ESFM3D43A				*D9L1407111 JMCO	WASHER	.00	
EED	ESFM3D53A	C1VF	10202 A		*D9L1301008 MF	INT-GEN TRAIL	.00	
EED	ESFM3D53A				*D9L1301010 MF	INT-GEN TRAIL	.00	
EED	ESFM3D53A				*D9L1301011 MF	INT-GEN TRAIL	.00	
EED	ESFM3D53A				*D9L1301053 MF	INT-GEN TRAIL	.00	
EED	ESFM3D56A	D0AT	08301 A		*D9A1302000 DBCM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302006 DBCM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302007 DBCM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302009 DBCM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302009 DBCM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302010 DBCM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302013 DBCM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302014 DBCM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302018 CCCL	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302019 CCCL	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302023 BCFM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302024 BCFM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302147 BCBM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302148 BCBM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302151 BCBM	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302189 DCHR	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302190 DCHR	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302191 DCHR	BOARD ASY-ALT PRINTED CIRCUIT	.00	
EED	ESFM3D56A				*D9A1302192 DCHR	BOARD ASY-ALT PRINTED CIRCUIT	.00	

8001 1305



Engineering Material Specification

Material Name

ASBESTOS PAPER BASE - PHENOLIC LAMINATE

Specification Number

F ESP-M3D80-A

1. SCOPE

The material defined by this specification is an asbestos paper base, laminated sheet material thoroughly impregnated with a thermosetting resin.

2. APPLICATION

This specification was released originally for material used where continuous high temperature (204°C) and mechanical strength are required such as the armature thrust washer in the starting motor.

3. REQUIREMENTS

3.1 TENSILE STRENGTH, min (ASTM D 638)

WMD	9500 psi (66 MPa)
AMD	7000 psi (48.3 MPa)

3.2 FLEXURAL STRENGTH, min (ASTM D 790)

16 000 psi (110 MPa)

3.3 COMPRESSIVE STRENGTH, min (ASTM D 695)

40 000 psi (276 MPa)

3.4 IMPACT STRENGTH, min (ASTM D 256, notched)

0.75 ft lb/in (40 J/m)

3.5 HARDNESS - ROCKWELL "M", min (ASTM D 785)

105

3.6 SPECIFIC GRAVITY, min (ASTM D 792, Method "A")

1.65

3.7 WATER ABSORPTION, max (ASTM D 570, 24 h immersion)

1.5%

3.8 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

Date	Para. NC	Revisions
1978 03 09		Metallized and Retyped CF4H-RD 567168-13
1963 10 11		Released F6-1139
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4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

S 461 A

SPAULDING FIBER CO., INC.
P.O. BOX 1408
ANN ARBOR, MICH. 48106

A-670-1

1977 12 01

Eng App
JUNE 77 3948-b

8001 1307

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JUN 21, 1979

PEO	MATERIAL	PREFIX	BASE	SUFFIX	FILE CONTROL NUMBER	DESCRIPTION	WEIGHT	PAGE 779 COMMENT
EED	ESFM3D76A	D7AF	188374 AA	*D9L1405230	AAG	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A			*D9L1405231	CBG	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A			*D9L1405232	CBG	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A	D8AF	188374 AA	*D9A1405001	DEB	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A			*D9A1405004	DFH	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A			*D9A1405012	BCH	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A			*D9A1405013	GMH	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A			*D9A1405022	EMH	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A			*D9A1405023	BCH	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A			*D9A1405025	GKC	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A			*D9A1405038	BCH	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A			*D9A1405044	DJB	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A			*D9A1405046	CEB	COMMUTATOR ASY-HTR BLWR MTR	.00	
EED	ESFM3D76A		2900152	*D9L1405101	DDG	COMM ASY-MTR	.00	
EED	ESFM3D76A			*D9L1405206	CCF	COMM ASY-MTR	.00	
EED	ESFM3D76A			*D9L1407107	NNBJD	COMM ASY-MTR	.00	
EED	ESFM3D76A			*D9L1407111	JMBLJ	COMM ASY-MTR	.00	
TRPO	ESFM3D78A	E0TA	7F067 AA	OKGE0703031		BALL ASY-TRANSF CSE GR SH LVR	.00	
TRPO	ESFM3D78A	C4TA	7213 A	OKGA0702075		BALL ASY-TRANS GR SHFT LVR	.00	
TRPO	ESFM3D78A			OKHA0702515		BALL ASY-TRANS GR SHFT LVR	.00	
TRPO	ESFM3D78A	D4HA	7213 CA	OKHA0702420		BALL ASY-TRANS GR SH LVR	.00	
TRPO	ESFM3D78A	D4HA	7213 DA	OKHA0702189		BALL ASY-TRANS GR SH LVR	.00	
TRPO	ESFM3D78A	D4HA	7213 EA	OKHA0702192		BALL ASY-TRANS GR SH LVR	.00	
TRPO	ESFM3D78A	D6HA	7213 AA	OKHA0702039		BALL ASY-TRANS GR SH LVR	.00	
TRPO	ESFM3D78A	D7HT	7213 DA	OKHA0702246		BALL ASY-TRANS GR SH LVR	.00	
TRPO	ESFM3D78A	E0TA	7213 AA	OKGA0704077		BALL ASY-TRANS GR SH LVR	.00	
TRPO	ESFM3D78A	E0TA	7213 BA	OKGA0702515		BALL ASY-TRANS GR SHFT LVR	.00	
EED	ESFM3D78A	D7OF	9C792 AA	*D9A1603009	D	RELAY ASY-HTR ASY-SPEED CONT	.00	
EED	ESFM3D78A			*D9A1603024	D	RELAY ASY-HTR ASY-SPEED CONT	.00	
TRPO	ESFM3D78A	D7HT	10C956 JA	OKHE2902027		CIP ASY-HTR BAR	.00	
BEPE	ESFM3D78A	D74B	13A366 A1A	0ADA2836001	B	PLY ASY-HTR SIG	.15	
BEPE	ESFM3D78A	D74B	13A366 A2A	0ADA2836002	B	PLY ASY-HTR SIG	.09	
BEPE	ESFM3D78A	D9AB	13480 AA	0AAE2802005		SW ASY-SPEED	.10	
BEPE	ESFM3D78A			0AVA0604002		SW ASY-SPEED	.10	
BEPE	ESFM3D78A	D3TB	13853 A1A	0AGA2910041		RELAY ASY-HTR	.20	
BEPE	ESFM3D78A	D9B//	14512 AA	0AQA2802339		RELAY ASY-HTR REG CONTR	.13	
BEPE	ESFM3D78A			0AZA0112202		RELAY ASY-HTR REG CONTR	.13	
BEPE	ESFM3D78A	D9//J	14512 BA	0AQA2802356		RELAY ASY-HTR REG CONTR	.15	
BEPE	ESFM3D78A	D9AB	14C690 AA	0AAA1701174		RELAY ASY-HTR BK LAT	.14	
BEPE	ESFM3D78A			0ADA2902281		RELAY ASY-HTR BK LAT	.14	
BEPE	ESFM3D78A			0ADA2802610		RELAY ASY-HTR BK LAT	.14	
BEPE	ESFM3D78A			0AVA1701043		RELAY ASY-HTR BK LAT	.14	
BEPE	ESFM3D78A			0AGE2802049		RELAY ASY-HTR BK LAT	.14	
BEPE	ESFM3D78A	D9AB	14C690 BA	0AAA1701175		RELAY ASY-HTR BK LAT	.14	
BEPE	ESFM3D78A			0ADA2802285		RELAY ASY-HTR BK LAT	.14	
BEPE	ESFM3D78A			0AQA2802617		RELAY ASY-HTR BK LAT	.14	
BEPE	ESFM3D78A			0AGE2802050		RELAY ASY-HTR BK LAT	.14	
BEPE	ESFM3D78A	D9AB	14C690 CA	0AGE2802051		RELAY ASY-HTR BK LAT	.15	
EED	ESFM3D80A	CDFL	11036 A	*D9L1307107	M	WASHER	.00	
EED	ESFM3D85A	D2AF	9B416 AA	*D9A1005000	GHNE	CONE ASY-FULL PUMP MTR	.00	
EED	ESFM3D85A			*D9A1005001	GHNE	CONE ASY-FULL PUMP MTR	.00	
EED	ESFM3D85A			*D9A1005003	GHNE	CONE ASY-FULL PUMP MTR	.00	
EED	ESFM3D85A			*D9A1005004	GHNE	CONE ASY-FULL PUMP MTR	.00	
EED	ESFM3D85A			*D9A1005005	GHNE	CONE ASY-FULL PUMP MTR	.00	
EED	ESFM3D85A	C7TF	10336 A	*D9L1302078	JDK	STATOR ASY-ALT	.00	
EED	ESFM3D85A			*D9L1302079	JDK	STATOR ASY-ALT	.00	
EED	ESFM3D85A			*D9L1302334	BN	STATOR ASY-ALT	.00	

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PG



Engineering Material Specification

Material Name

ASBESTOS PAPER BASE, PHENOLIC LAMINATE - OIL RESISTANT *mp W*

Specification Number

ESW-M3D81-A

NO PART X REF.

1. SCOPE

The material defined by this specification is an asbestos paper base, laminate impregnated with a thermosetting resin suitable for use in oil at high temperatures.

2. APPLICATION

This specification was released originally for material used in thrust washers for automatic transmissions.

3. REQUIREMENTS

3.1 TENSILE STRENGTH, min (ASTM D 638)

With Grain
Against Grain

9500 psi (66 MPa)
7000 psi (49 MPa)

3.2 FLEXURAL STRENGTH, min (ASTM D 790, flat with grain)

16 000 psi (110 MPa)

3.3 COMPRESSIVE STRENGTH, min (ASTM D 695)

40 000 psi (276 MPa)

3.4 IMPACT STRENGTH, Izod, min (ASTM D 256, notched)

0.75 ft lb/in (40 J/m)

3.5 HARDNESS - ROCKWELL "M" (ASTM D 785)

105 - 111

3.6 SPECIFIC GRAVITY, min (ASTM D 792)

1.65

3.7 OIL IMMERSION

Production parts manufactured from material covered by this specification must meet the following oil immersion test.

ASTM #1 Oil at $190 \pm 3^\circ\text{C}$ for 1 h.
Sample shall not check, warp or blister.

Automatic transmission fluid (M-2C33-F and ESP-M2C138-CJ) at $190 \pm 3^\circ\text{C}$ for 1 h.
Sample shall not check, warp or blister.

Date	Part No	Revisions
1975 11 15		Metricated and Retyped <i>per 00782440-23</i>
1964 01 27		Released CPS-405371

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3.7 OIL IMMERSION

Note: Suspend samples in the oil immersion bath, with bath at 93°C , bring bath to $190 \pm 3^{\circ}\text{C}$ within 1 h. Hold at $190 \pm 3^{\circ}\text{C}$ for 1 h.

3.8 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering officer. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

S 461 A

SPAULDING FIBER, INC

A-670-1

U 802 A

UNIVERSAL OIL PROD.
NORPLEX 839-4592

701 H



Engineering Material Specification

Material Name

**PHENOLIC COMPRESSION MOLDING COMPOUND
ASBESTOS REINFORCED**

Specification Number

p x W

**ESW-M3D97-A
NO PART X REF.**

1. SCOPE

The material defined by this specification is a two stage, asbestos filled, high heat resistant, molding material capable of withstanding operational temperatures in the 204°C range.

2. APPLICATION

This specification was released originally for material used as thrust washers in automatic transmissions.

3. REQUIREMENTS

3.1 COMPRESSION MOLDED TEST SPECIMENS (As molded without post bake.)

3.1.1	Impact Strength, Izod, min (ASTM D 256)	0.3 ft lb/in (16 J/m)
3.1.2	Specific Gravity (ASTM D 792)	1.57 - 1.59
3.1.3	Flexural Strength, min (ASTM D 790)	9500 psi (66 MPa)
3.1.4	Tensile Strength, min (ASTM D 638)	6000 psi (41.4 MPa)
3.1.5	Compressive Strength, min (ASTM D 695)	26 000 psi (179 MPa)
3.1.6	Water Absorption, max (ASTM D 570)	0.3%
3.1.7	Hardness - Rockwell "E", min (ASTM D 785)	80
3.1.8	Deflection Temperature, min (ASTM D 646, 264 psi (1820 kPa))	182°C
3.1.9	Ash, min (FLTM BO 6-2)	25%

Date	Para No	Revisions
1968 11 15		Metricated and Retyped FOR ESW-M3D97-A
1968 10 28		Released CPE-CR486658
1968 3948-a		

8001 1311



3.2 MOLDED PARTS

Specific requirements for physical properties of molded parts, when required, shall be as specified on engineering drawings.

3.3 INFRARED SPECTROPHOTOMETRY

Ford Motor Company, at its option, may conduct infrared analysis of material/parts supplied to this specification. The curves established for initial approval shall constitute the reference standard and shall be kept on file at Central Laboratory. All samples shall produce curves that correspond to the reference standard when tested under the same conditions as those specified on the master curve.

3.4 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

H 550 A

HOOKER CHEM. CORP.

22042

DUREZ
2177 E. MILWAUKEE
DETROIT, MICH. 48211

U 062 A

UNION CARBIDE

5303-BLACK 25

FIBERS & FABRIC DIV.

SOUTHFIELD, MICH. 48076



Engineering Material Specification

Material Name

Specification Number

**PHENOLIC INJECTION OR TRANSFER MOLDING COMPOUND μ x W/
ASBESTOS REINFORCED**

ESW-M3D108-A

NO PART X REF.

1. SCOPE

The material defined by this specification is a two stage, asbestos filled, high heat resistant molding material capable of withstanding operational temperatures in the 204°C range.

2. APPLICATION

This specification was released originally for material used as thrust washers in automatic transmissions.

3. REQUIREMENTS

3.1 INJECTION OR TRANSFER MOLDED TEST SPECIMENS (As molded without post bake.)

3.1.1	Impact Strength, Izod, min (ASTM D 256, notched)	0.3 ft lb/in (16 J/m)
3.1.2	Specific Gravity (ASTM D 792)	1.45 - 1.47
3.1.3	Flexural Strength, min (ASTM D 790)	14 000 psi (97 MPa)
3.1.4	Tensile Strength, min (ASTM D 638)	7000 psi (48.3 MPa)
3.1.5	Compressive Strength, min (ASTM D 695)	28 000 psi (193 MPa)
3.1.6	Water Absorption, max (ASTM D 570)	0.3%
3.1.7	Hardness - Rockwell "E", min (ASTM D 785)	85
3.1.8	Deflection Temperature, min (ASTM D 648, 264 psi (1820 kPa))	177°C
3.1.9	Ash, min (FLTM BO 6-2)	20%

Date	Para. No.	Revisions
1978 11 15		Metricated and Retyped PCR RD782410-P3
1968 11 01		Released CP5-PA929042

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Eng Res 3948-a
June 77

8001 1313



3.2 MOLDED PARTS

Specific requirements for physical properties of molded parts, when required, shall be as specified on engineering drawings.

3.3 INFRARED SPECTROPHOTOMETRY

Ford Motor Company, at its option, may conduct infrared analysis of material/parts supplied to this specification. The curves established for initial approval shall constitute the reference standard and shall be kept on file at Central Laboratory. All samples shall produce curves that correspond to the reference standard when tested under the same conditions as those specified on the master curve.

3.4 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

U 062 A

UNION CARBIDE

5310

SOUTHFIELD, MICH.

1977 11 19

Eng Res
June 77 3948-b

Page 2 of 2

8001 1314

PRODUCED BY



Engineering Material Specification

Material Name

Specification Number

**PHENOLIC, TRANSFER MOLDING COMPOUND
FAST MOLDING - MINERAL FILLED ASBESTOS REINFORCED**

F ESF-M3D113-A

1. SCOPE

The material defined by this specification is a two stage, transfer molding grade, mineral filled, phenolic molding compound with low moisture absorption, and good dimensional stability at elevated temperatures.

2. APPLICATION

This specification was released originally for material used in the molded commutator for starting motors.

3. REQUIREMENTS

3.1 PROPERTIES OF MOLDED MATERIAL

3.1.1	Conditioning	48 h at 50°C, test at 23°C ± 2°C
3.1.2	Color	The color shall be as specified on engineering drawing.
3.1.3	Specific Gravity (ASTM D 792)	1.67 - 1.71
3.1.4	Water Absorption, max (ASTM D 570)	0.2%
3.1.5	Impact Strength, min (ASTM D 256, notched)	0.58 ft lb/in (31 J/m)
3.1.6	Flexural Strength, min (ASTM D 790)	12 000 psi (83 MPa)
3.1.7	Tensile Strength, min (ASTM D 638)	6000 psi (41.4 MPa)
3.1.8	Compressive Strength, min (ASTM D 695)	20 000 psi (138 MPa)
3.1.9	Deflection Temperature, min (ASTM D 648, 264 psi (1820 kPa))	260°C

Date	Para. No.	Revisions
1978 03 09		Metricated and Retyped <i>CF4H-RD 567168.13</i>
1970 06 04		Released F6Z-289

R001 1315

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3.1.10	Dielectric Strength, min (ASTM D 149, 48 h at 50% R.H., $23 \pm 2^{\circ}\text{C}$)	
	Short Time	150 V/ml (5.9 kV/mm)
	Step by Step	100 V/ml (3.9 kV/mm)
3.1.11	Ash, min (FLTM BO 6-2)	44%
3.1.12	Deformation at 76°C , max (ASTM D 621, Method "A", 4000 psi (27.6 MPa), 1/8 in (3.2 mm) thick)	0.40%

3.2 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new, existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

5. GENERAL INFORMATION

Any material data included herein is for information only and is not a requirement for the supplier.

5.1	MODULUS OF ELASTICITY IN TENSION (ASTM D 638)	2.1×10^6 psi (14.5 GPa)
5.2	HARDNESS - ROCKWELL "E" (ASTM D 785)	92
5.3	MOLDING SHRINKAGE (ASTM D 955)	
	Compression	0.0015 - 0.0035 in/in (mm/mm)
	Transfer	0.0035 - 0.0055 in/in (mm/mm)

ROGERS

RX466



Engineering Material Specification

Material Name

Specification Number

PHENOLIC, TRANSFER MOLDING COMPOUND - MINERAL FILLED
ASBESTOS REINFORCED

P ESW-M3D117-A

1. SCOPE

The material defined by this specification is a two stage, transfer molding grade, mineral filled, flake phenolic molding compound with low moisture absorption, and good dimensional stability at elevated temperatures.

2. APPLICATION

This specification was released originally for material used to mold automatic transmission converter reactors.

3. REQUIREMENTS

3.1 COMPRESSION MOLDED TEST SPECIMENS (As molded without post bake.)

3.1.1	Color	Black
3.1.2	Specific Gravity (ASTM D 792)	1.74 - 1.80
3.1.3	Water Absorption, max (ASTM D 570)	0.5%
3.1.4	Impact Strength, min (ASTM D 256, notched)	1.2 ft lb/in (64 J/m)
3.1.5	Flexural Strength, min (ASTM D 790)	9500 psi (65 MPa)
3.1.6	Tensile Strength, min (ASTM D 638)	4700 psi (32.4 MPa)
3.1.7	Compressive Strength, min (ASTM D 695)	20 000 psi (138 MPa)
3.1.8	Deflection Temperature, min (ASTM D 648, 264 psi (1820 kPa))	260°C
3.1.9	Ash, min (FLTM BO 6-2)	48%
3.1.10	Hardness - Rockwell "E", min (ASTM D 785)	90

Date	Para. No.	Revisions
1978 11 15		Metricated and Retyped PCR RD722440-P3 <i>J. Mamm</i>
1971 09 27		Released CP5-971708 <i>J</i>

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June 77 3948-a

8001 1317



3.1.11 Infrared Spectrophotometry

Ford Motor Company, at its option, may conduct infrared analysis of material/parts supplied to this specification. The curves established for initial approval shall constitute the reference standard and shall be kept on file at Central Laboratory. All samples shall produce curves that correspond to the reference standard when tested under the same conditions as those specified on the master curve.

3.1.12 Physical and/or Performance of Finished Product

When required, shall be as specified on the affected part or product engineering drawing, or in the affected part or product engineering performance specification.

3.2 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

ROGERS

RX46Z
(FLAKE)

1977 11 21

Eng Res
June 77 3948-b

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0001 1318



Engineering Material Specification

Material Name

Specification Number

MILLBOARD, ASBESTOS-RIGID-HEAT INSULATOR

**ESB-M2E57-A
VESB-M2E57-B**

NO PART X REF.

1. SCOPE

The material defined by this specification is a rigid asbestos millboard of uniform composition.

2. APPLICATION

This specification was released originally for material used as a heat insulator between the floor pan and the exhaust system.

3. REQUIREMENTS

3.1 CONDITIONING

All test values indicated herein are based on material conditioned in a controlled atmosphere of $23 \pm 2^{\circ}\text{C}$ and $50 \pm 5\%$ relative humidity for 24 h prior to testing and tested under the same controlled conditions.

3.2 WEIGHT, min 1.15 lb/ft² (5.62 kg/m²)
(ASTM D 461)

3.3 THICKNESS 0.245-0.285 in (6.22-7.24 mm)
(ASTM D 461, except use 1.0 in (25 mm)
diameter foot, 1 lb (454 g) total load)

3.4 TENSILE STRENGTH, min
(ASTM D 638, except sample size shall
be 0.5 x 6.0 in (13 x 152 mm)

WMD 550 psi (3.8 MPa)
AMD 200 psi (1.4 MPa)

3.5 FLEXURAL STRENGTH, min
(ASTM D 790, except sample size is
2 x 6 in (51 x 152 mm) with 4.0 in (102 mm)
span)

3.5.1 Normal

WMD 1000 psi (6.9 MPa)
AMD 500 psi (3.5 MPa)

Date	Para. No.	Revisions
1963 08 11		Metricated, Renumbered & Retyped CAHI-RD572066-78
1971 08 17		Released VESB-M2E57-B AB1-302-14
1963 08 08		Released ESB-M2E57-A AS1-1023

3946-a

8001 1319

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3.5.2 Wet

WMD	500 psi (3.5 MPa)
AMD	500 psi (3.5 MPa)

Test Method: Immerse sample in water for 16 h at $23 \pm 2^{\circ}\text{C}$. Blot specimens with paper towelling.

3.5.3 After Cycling

WMD	500 psi (3.5 MPa)
AMD	250 psi (1.75 MPa)

Test Method: As described under para 3.6.

3.6 CYCLING TEST

No evidence of distortion, delamination or warping.

Test Method: Sample sizes shall be as outlined under para 3.5. The specimens shall be exposed to 3 complete cycles of the following.

- 2 h water immersion at $23 \pm 2^{\circ}\text{C}$
- 3 h at -34°C
- 3 h at $82 \pm 3^{\circ}\text{C}$

3.7 WATER ABSORPTION, max **60.0%**
(FLTM BS 4-1, Method "A", 2 h total immersion)

3.8 VESB-M2E57-B FLAMMABILITY

3.8.1 In order to comply with Federal Motor Vehicle Safety Standard No. 302, the materials, portions of components, and composites shall not burn, or transmit a flame across its surface, at a rate of more than 4 in (101 mm) per min. To demonstrate compliance, the sample size and method of testing shall be in accordance with FLTM BN 24-2.

3.8.2 Performance - Environmental Aging

All materials, portions of components, and composites defined by this specification that have not been treated, modified or reformulated and exceed a max burn rate of 3.0 in (76 mm) per min as specified by the Flammability Lot Sampling Plan of FLTM BN 24-2, must be evaluated for permanency of the materials' flame retardant properties per ESB-M25P3-A according to the accelerated environmental aging requirements applicable to the basic material category of this particular specification.

Any material, portions of components, and composites defined by this specification that have been treated, modified or reformulated to conform to Flammability Lot Sampling Plan of FLTM BN 24-2, regardless of max burn rate, must be evaluated for both permanency of materials' flame retardant properties and changes in mechanical, chemical and physical properties per ESB-M25P3-A applicable to the basic materials category of this particular specification.



3.8.3 Flammability Test Program

Materials, portions of components, and composites governed by this specification must also comply with the requirements of VES-D3AB-11014-AA.

3.9 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

G 013 A

GAF CORP.
INDUSTRIAL PROD. DIV.
21400 HOOVER
WARREN, MICH. 48090
313-756-2565

E-104

P 032 A

PANACON CORP.
PHILLIP CAREY CO.
320 S. WAYNE
CINCINNATI, OHIO 45215
513-821-3006



Engineering Material Specification

Material Name

Specification Number

SEALER, ENGINE AND CHASSIS - HEAVY
SEALER, ENGINE AND CHASSIS - MEDIUM
SEALER, ENGINE AND CHASSIS - LIGHT

6 E / 4 u
6 E /
6 E /

ESE-M4G114-A
ESE-M4G115-A
ESE-M4G116-A

1. SCOPE

The materials defined by these specifications are asbestos filled vegetable oil type sealers which will dry without becoming hard and brittle and are resistant to oil, water, and engine coolant solutions.

2. APPLICATION

These specifications were released originally for materials used for sealing studs, plugs, gaskets, and joints in the engine and chassis assemblies to prevent leakage of lubricant or coolant. They are applied by flowing, dipping, brushing, or roll-coating.

3. REQUIREMENTS

3.1	VISCOSITY, s (FLTM BU 4-1. 4 hole disc)	As Received	Aged, max
	ESE-M4G114-A, 250 g load	45 - 55	100
	ESE-M4G115-A, 100 g load	20 - 25	60
	ESE-M4G116-A, 100 g load	10 - 15	35
3.2	SOLIDS, % min (2 ± 0.5 g sample, heat at 102 ± 3°C in a mechanical convection oven for 3 h)		
	ESE-M4G114-A	80	
	ESE-M4G115-A	70	
	ESE-M4G116-A	65	
3.3	FLASH POINT, min (ASTM D 1310)	46°C	
3.4	WEIGHT PER VOLUME (ASTM D 816)	8 - 9 lb/gal (0.96 - 1.08 kg/L)	

The weight tolerance for any one supplier shall be + 0.2 lb/gal (0.02 kg/L) based on the recorded weight of his original approved production sample.

3.5 QUALITY

Shall be a smooth homogeneous mixture free from foreign materials and properties detrimental to normal production use.

Date	Para. No.	Revisions
278.15		Metricated and Retyped CE3H-78244C-E
1963 08 09		Released E7-2756



Engineering Material Specification

ESL-M4G115-A
ESE-M4G115-A
ESE-M4G116-A

3.6 RESISTANCE TO INITIAL FILL ENGINE OIL (FLTM BV 6-1, 72 h)

Shall prevent leakage of oil from the test assembly.

3.7 RESISTANCE TO ENGINE COOLANT SOLUTIONS

Any evidence of Coolant leakage during the 72 h test period shall be recorded as a material failure.

Test Method: Follow test method outlined under para. 3.6, except fill the assembly with a 50/50 mixture of initial fill engine coolant concentrate, ethylene glycol, and water.

3.8 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure 1-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure 1-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

5. GENERAL INFORMATION

This information is for direction of the user and is not a requirement for the supplier.

5.1 FLAMMABILITY AND/OR TOXICITY

This material represents a potential fire and/or health hazard. The Manufacturing Engineering Department shall notify both the Plant Security and the Safety Units of its presence in the Plant to assure that proper fire and/or health precautions are provided. The location in which it is used or stored shall be included in the notification.

A 211 A

P. O. B. MFG. CO., INC.
2021 MONROE
DEARBORN, MICH. 48123

3, # 4, # 5

P 274 A

PERMATEX CO., INC.
Box 1350
W. PALM BEACH, FL. 33402
305-686-0880

X 884, X 886, 518

P 413 A

PIERCE & STEVENS CHEM. CORP.
710 OHIO ST.
BUFFALO, N.Y. 14203

C 9907, C 9541, E 9022

800) 1323

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JUN 21, 1979

MATERIAL CROSS REFERENCE - MATERIAL/PART NUMBER SEQ.

PAGE 1343

PEO	MATERIAL	SUFFIX	BASE	SUFFIX	FILE CONTROL NUMBER	DESCRIPTION	WEIGHT	COMMENT
CCD	ESMIG110A	D9LH	19740	AC	*W9A1405130	PLUM CHMB ASY - A/CON /ATC/	10.27	
CCD	ESMIG110A	D7DH	19805	BA	*W9A1405000	MOTOR ASY-A/C BLOWER	.00	
CCD	ESMIG110A	D9LH	19850	AA	*W9A1405140	EVAP ASY-1.1	.00	
CCD	ESMIG110A	D7EH	190850	AA	OWIE1405113 A	DUCT-A/C INSTR PNL REGSTR-LH	.00	
CCU	ESMIG110A	D9DH	190850	AA	*W9A1405040	TIME ASY-A/C COMP SUCTION & DISCH	3.59	
CCD	ESMIG110B	D9AH	19456	AF	*W9A1405000	BLOWER ASSEMBLY-HEATER	11.60	
CCD	ESMIG110B	D9LH	19456	AA	*W9A1405062	BLWR ASY-HEP /ATC/	8.00	
CCD	ESMIG110B	D9CH	19456	AA	*W9A1405061	CLP ASY-HEP /A/C/	8.00	
CCD	ESMIG110B	E0SH	190555	AE	*W9A1405142	LVR & BLW ASY - A/CON	.00	
CCD	ESMIG110B	F0SH	190555	BE	*W9A1405141	EVAP & BLWR ASY-A/C /ATC/	28.44	
CCD	ESMIG110B	D9RH	190811	AA	OWGE1405021	EVP PLUM CHMB & DUCT-A/CON	2.30	
CCD	ESMIG110B				OWZE1405102	EVP PLUM CHMB & DUCT-A/CON	2.30	
CCD	ESMIG110B				*W9A1405010	CLP PLUM CHMB & DUCT-A/CON	2.30	
CCD	ESMIG110B	F0SH	190811	AB	OWSE1405022	EVAP PLUM CHMB & DUCT ASY	2.30	
CCD	ESMIG110B				*W9A1405050	EVAP PLUM CHMB & DUCT ASY	2.30	
CCD	ESMIG110B	D9CH	19850	BA	*W9A1405160	EVAPORATOR ASY-A/CON	.00	
CCD	ESMIG110B	E0HT	19850	AC	OWGE1405720	EVAPORATOR ASY-A/C	.20	
CCD	ESMIG110B	E0TH	19850	CS	OWGE1405515	EVAPORATOR ASSEMBLY A/COND	.00	
CCD	ESMIG110B				*W9A1405054	EVAPORATOR ASSEMBLY A/COND	.00	
CCD	ESMIG110B	E0TH	19850	DB	OWGE1405520	EVAPORATOR ASY-A/C	.00	
CCD	ESMIG110B				*W9A1405067	EVAPORATOR ASY-A/C	.00	
CCD	ESMIG114A	DIDE	R005	PA	*W9A2301043	RADIATOR ASY	.00	
CCD	ESMIG114A	D9DF	R005	HA	*W9A2301541	RAD ASY	.00	
CCD	ESMIG114A	D9DF	R005	JA	*W9A2301543	RAD ASY	.00	
CCD	ESMIG114A	D9DH	R005	AA	*W9A2301541	RAD ASY	.00	
CCD	ESMIG114A	D9DH	R005	DA	*W9A2301530	RAD ASY	.00	
CCD	ESMIG114A	D9AH	R005	GA	*W9A2301055	RADIATOR ASY-CLR CODE-WHITE	.00	
CCD	ESMIG114A	D9AH	R005	JA	*W9A2301529	RAD ASY	.00	
CCD	ESMIG114A	D9AH	R005	KA	*W9A2301621	RAD ASY	.00	
CCD	ESMIG114A	D9AH	R005	NA	*W9A2301530	RAD ASY	.00	
CCD	ESMIG114A	D9AH	R005	RA	*W9A2301502	RADIATOR ASY	.00	
CCD	ESMIG114A	D9UH	R005	AA	*W9A2301530	RAD ASY	.00	
CCD	ESMIG114A	D9UH	R005	DA	*W9A2301542	RAD ASY	.00	
CCD	ESMIG114A	D9DH	R005	HA	*W9A2301600	RAD ASY	.00	
CCD	ESMIG114A	D9DH	R005	KA	*W9A2301564	RADIATOR ASY	.00	
CCD	ESMIG114A	D9DH	R005	MA	*W9A2301602	RAD ASY	.00	
CCD	ESMIG114A	D9CH	R005	RA	*W9A2301560	RADIATOR ASY	.00	
CCD	ESMIG114A	D9DH	R005	SA	*W9A2301569	RADIATOR ASSEMBLY	.00	
CCD	ESMIG114A	D9DH	R005	TA	*W9A2301605	RAD ASY	.00	
CCD	ESMIG114A	D9DH	R005	UA	*W9A2301591	RAD ASY	.00	
CCD	ESMIG114A	D9CH	R005	XA	*W9A2301600	RAD ASY	.00	
CCD	ESMIG114A	D9DH	R005	YA	*W9A2301600	RAD ASY	.00	
CCD	ESMIG114A	D9CH	R005	AA	*W9A2301577	RAD ASY	.00	
CCD	ESMIG114A	D9CH	R005	CA	*W9A2301576	RAD ASY	.00	
CCD	ESMIG114A	D9CH	R005	BA	*W9A2301563	RADIATOR ASY	.00	
CCD	ESMIG114A	D9CH	R005	EA	*W9A2301500	RADIATOR ASY	.00	
CCD	ESMIG114A	D9SH	R005	AA	*W9A2301524	RAD ASY	.00	
CCD	ESMIG114A	D9VH	R005	AA	*W9A2301531	RAD ASY	.00	
CCD	ESMIG114A	D9ZH	R005	EA	*W9A2301610	RAD ASY	.00	
CCD	ESMIG114A	D9ZH	R005	JA	*W9A2301611	RAD ASY	.00	
CCD	ESMIG114A	D9ZH	R005	KA	*W9A2301630	RAD ASY	.00	
CCD	ESMIG114A	D7DH	R005	AA	*W9A2301639	RAD ASY	.00	
CCD	ESMIG114A	D7EH	R005	MA	*W9A2301612	RAD ASY	.00	
CCD	ESMIG114A	D7ZH	R005	MA	*W9A2301593	RAD ASY	.00	
CCD	ESMIG114A	D7ZH	R005	NA	*W9A2301642	RAD ASY	.00	
CCD	ESMIG114A	D7ZH	R005	PA	*W9A2301575	RAD ASY	.00	
CCD	ESMIG114A	D8BH	R005	AA	*W9A2301649	RAD ASY	.00	

9001 1324

Pg

PEO

FILE CONTROL NUMBER

COMMENT

PEO	MATERIAL	PREFIX	BASE	SUFFIX	FILE CONTROL NUMBER	DESCRIPTION	WEIGHT	COMMENT
CCD	ESERMIG114A	DBBH	R005	BA	*W9A2301653	RAD ASY	.00	
CCD	ESERMIG114A	DBBH	R005	CA	*W9A2301654	RAD ASY	.00	
CCD	ESERMIG114A	DBBH	R005	CA	*W9A2301650	RAD ASY	.00	
CCD	ESERMIG114A	DBBH	R005	EA	*W9A2301651	RAD ASY	.00	
CCD	ESERMIG114A	DBBH	R005	FA	*W9A2301655	RAD ASY	.00	
CCD	ESERMIG114A	DBBH	R005	GA	*W9A2301656	RAD ASY	.00	
CCD	ESERMIG114A	DBBH	R005	HA	*W9A2301657	RAD ASY	.00	
CCD	ESERMIG114A	DBBH	R005	JA	*W9A2301657	RAD ASY	.00	
CCD	ESERMIG114A	DBBH	R005	KA	*W9A2301658	RAD ASY	.00	
CCD	ESERMIG114A	DBBH	R005	LA	*W9A2301660	RAD ASY	.00	
CCD	ESERMIG114A	DBBH	R005	MA	*W9A2301659	RAD ASY	.00	
CCD	ESERMIG114A	DBBH	R005	NA	*W9A2301660	RAD ASY	.00	
CCU	ESERMIG118A	DBAH	R005	GA	*W9A2301659	RADIATOR ASY-CLR CODE-WHITE	.00	
CCD	ESERMIG118A	DBAH	R005	JA	*W9A2301629	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	KA	*W9A2301621	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	NA	*W9A2301530	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	RA	*W9A2301502	RADIATOR ASY	.00	
CCD	ESERMIG118A	DBAH	R005	HA	*W9A2301503	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	MA	*W9A2301502	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	RA	*W9A2301506	RADIATOR ASY	.00	
CCU	ESERMIG118A	DBAH	R005	TA	*W9A2301605	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	UA	*W9A2301591	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	XA	*W9A2301606	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	YA	*W9A2301609	RAD ASY	.00	
CCU	ESERMIG118A	DBAH	R005	EA	*W9A2301500	RADIATOR ASY	.00	
CCD	ESERMIG118A	DBAH	R005	AA	*W9A2301504	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	AA	*W9A2301531	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	AA	*W9A2301639	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	AA	*W9A2301640	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	EA	*W9A2301653	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	CA	*W9A2301651	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	DA	*W9A2301650	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	EA	*W9A2301651	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	FA	*W9A2301655	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	GA	*W9A2301656	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	HA	*W9A2301657	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	JA	*W9A2301657	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	KA	*W9A2301658	RAD ASY	.00	
CCD	ESERMIG118A	DBAH	R005	LA	*W9A2301659	RAD ASY	.00	
CCD	ESERMIG118AA	DBAH	R005	KA	*W9L2301564	RADIATOR ASY	.00	
TRANS	ESERMIG122A	DBAH	7003	FA	0E7W0700007	TRANS ASY 3 SPD	9999.99	
TRANS	ESERMIG122A	DBAH	7003	EA	0E7W0700002	TRANS ASY 3 SPD	9999.99	
TRANS	ESERMIG122A	DBAH	7003	BA	0E7W0700000	TRANS ASY 3 SPD	9999.99	
TRANS	ESERMIG122A	ESE	M3G132	A	0E7W0705003	SE DISPERGION TYPE	9999.99	
EED	ESAMIG140A	D9SF	124683	BA	*D9A2300021	ELECTROMAGNET ASY-CRANK SHAFT	.00	
EED	ESAMIG140A				*D9A2300062	ELECTROMAGNET ASY-CRANK SHAFT	.00	
EED	ESAMIG140A	D2AF	9C341	AB	*D9A1005000	SEPARATOR ASY-FUEL PUMP	.00	
EED	ESAMIG140A				*D9L1005000	SEPARATOR ASY-FUEL PUMP	.00	
EED	ESAMIG140A	D2AF	9C341	BB	*D9A1005001	SEPARATOR ASY-FUEL PUMP	.00	
EED	ESAMIG140A				*D9L1005001	SEPARATOR ASY-FUEL PUMP	.00	
EED	ESAMIG140A	D2OF	9C341	AA	*D9L1005002	SEPARATOR ASY-FUEL PMP	.00	
EED	ESAMIG140A	D4AF	9C341	AA	*D9A1005003	SEPARATOR ASY-FUEL PUMP	.00	
EED	ESAMIG140A	D4AF	9C341	BA	*D9A1005004	SEPARATOR ASY-FUEL PUMP	.00	
EED	ESAMIG140A	D4OF	9C341	AA	*D9A1005005	SEPARATOR ASY-FUEL PUMP	.00	
BEPE	ESDMIG151A	D99B	66297A28	AB	0A0A2702052	SE ASY-OTR WDD GL	.28	
BEPE	ESDMIG151A	D99B	66297A28	BB	0A0A2702053	SE ASY-OTR WDD GL	.28	
BEPE	ESDMIG151A	E05B	66297A28	AA	0A5A2702052	SE ASY-OTR WDD GL	.27	

8001 132

Q

**Specification Number**

PSE-M8G1-A

The material defined by this specification is a neoprene rubber bonded, compressed asbestos sheet gasket.

This specification was released originally for material used for applications where resistance to tear, delamination, and swelling is required, and where a certain amount of swell is desired, i.e., gaskets for oil pump, oil pump cover gaskets and hydraulic lift covers.

3.1 CONDITIONING

and spectrometrically stable for use as a standard in a mechanical convection oven maintained at $100 \pm 3^\circ\text{C}$ and then stored in a desiccator until tested.

5. PHYSICAL PROPERTIES

Compressibility (ASTM F 38, 100% total load,	7 - 17%
Recovery, %	40%
Tensile Strength, psi (ASTM F 38, 100% total load,	2000 psi (13.8 MPa)
Compression Set, % (ASTM D 395, Method A, 100% load, 100°C)	8%
Flexibility Factor, %	12

Test Method: Strip of the material (approximately 1 1/2 in. or 38 mm wide by 0.1 in. (2.5 mm) thick) may be used, cut with the grain, and across the grain, bent and break when bent slowly 180° around a rod of appropriate diameter. The diameter of the rod to be determined by multiplying the thickness of the material by its flexibility factor.

10. DATES AFTER FILED FOR

505

8001 1326

PQ

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3.3.1	ASTM Oil #1 (70 h at $102 \pm 3^{\circ}\text{C}$)	
	Flexibility Factor	16
3.3.2	ASTM Oil #1 (5 h at 149°C)	
	Compressibility, max	35%
	Tensile Strength Loss, max	30%
	Thickness Change, max	15%
3.3.3	ASTM Oil #3 (5 h at 149°C)	
	Thickness Change, max	50%
3.3.4	ASTM Reference Fuel #2 (5 h at $21-29^{\circ}\text{C}$)	
	Thickness Change	0 to 15%

3.4 HEAT AGED PROPERTIES (50 h at $102 \pm 3^{\circ}\text{C}$, oven)

Flexibility Factor 16

3.5 MANUFACTURER'S IDENTIFICATION

The material must be branded with the manufacturer's trademark and style number. The color of the material and brand name must be on record and cannot be changed.

3.6 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure 1-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a new/existing ES-M specification is contained in Supplier Procedure 1-A. Suppliers will be added to the Engineering Materials Approved Source List.

D 276 A	DETROIT GASKET	1601, 1606
V 782 C	VICTOR MFG. & GASKET CO.	VICTOPAC-60U
N 741 A	NICOLET INDUSTRIES, INC	KM
	29350 SOUTHFIELD	
	SOUTHFIELD, MICH.	
	313-559-5244	

B001 1327

PQ

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JUN 21, 1979

MATERIAL CROSS REFERENCE - MATERIAL/PART NUMBER SEQ.

PAGE 1352

PEO	MATERIAL	PREFIX	BASE	SUFFIX	FILE CONTROL NUMBER	DESCRIPTION	WEIGHT	COMMENT
BEPE	ESPM5G28B	D70B	6646702 AA		0ADA2608002	INS PKG TRY PNL FRT	.10	
EED	ESFMGG1A	.C3AF	10914 A		*D9A1309000 B	GASKET-WATER TEMP SDR TRMNL	.00	
EED	ESFMGG1A				*D9A1309001 F	GASKET-WATER TEMP SDR TRMNL	.00	
EED	ESFMGG1A				*D9A1309003 B	GASKET-WATER TEMP SDR TRMNL	.00	
EED	ESFMGG1A				*D9A1309001 B	GASKET-WATER TEMP SDR TRMNL	.00	
EED	ESFMGG1A				*D9L1309003 H	GASKET-WATER TEMP SDR TRMNL	.00	
EED	ESFMGG1A				*D9L1309004 B	GASKET-WATER TEMP SDR TRMNL	.00	
EED	ESFMGG1A				*D9L1309005 B	GASKET-WATER TEMP SDR TRMNL	.00	
EED	ESFMGG1A				*D9L1309006 B	GASKET-WATER TEMP SDR TRMNL	.00	
EED	ESFMGG1A				*D9L1309008 B	GASKET-WATER TEMP SDR TRMNL	.00	
EED	ESFMGG1A				*D9L1309011 B	GASKET-WATER TEMP SDR TRMNL	.00	
TRPO	ESAMGG10A	E0TA	5L302 AA		0KGA0401075	SLEEVE-FRT SPG INSULATOR	.20	
CHASSIS	ESAMGG10A	D8BC	5K485 AA		0BQA0404921 C	SLEEVE-STABILIZER BAR	.00	
CHASSIS	ESAMGG10A	DHBC	5K485 BA		0BQA0404922 C	SLEEVE-STABILIZER BAR	.00	
CHASSIS	ESAMGG10A	D8BC	5K485 CA		0BQA0404920 C	SLEEVE-STABILIZER BAR	.00	
CHASSIS	ESAMGG10A	D8BC	5K485 DA		0BQA0404923 C	SLEEVE-STABILIZER BAR	.00	
CHASSIS	ESAMGG10A				0BSA0404926 C	SLEEVE-STABILIZER BAR	.00	
CHASSIS	ESAMGG10A				0BZA0404923 C	SLEEVE-STABILIZER BAR	.00	
CHASSIS	ESAMGG10A	D92C	5K485 AA		0BZA0404924 C	SLEEVE-STABILIZER BAR	.00	
CHASSIS	ESAMGG10A	D5DN	5586 AA		0BDA0501115 AV	INSERT-REAR SPRING	.00	
CHASSIS	ESAMGG10A				0BDA0501116 AV	INSERT-REAR SPRING	.00	
CHASSIS	ESAMGG10A				0BDA0501111 AV	INSERT-REAR SPRING	.00	
CHASSIS	ESAMGG10A				0BDA0501112 AV	INSERT-REAR SPRING	.00	
CHASSIS	ESAMGG10A				0BDA0501107 AV	INSERT-REAR SPRING	.00	
CHASSIS	ESAMGG10A				0BTA0501201 AV	INSERT-REAR SPRING	.00	
CHASSIS	ESAMGG10A				0BTA0501202 AV	INSERT-REAR SPRING	.00	
CHASSIS	ESAMGG10A				0BTA0501207 AV	INSERT-REAR SPRING	.00	
CHASSIS	ESAMGG10A				0BTA0501208 AV	INSERT-REAR SPRING	.00	
CHASSIS	ESAMGG10A				0BTA0501200 AV	INSERT-REAR SPRING	.00	
CHASSIS	ESAMGG10A				0BTA0501209 AV	INSERT-REAR SPRING	.00	
TRPO	ESFMGG15A	D6TA	9240 DA		0KGE1002013	INSULATOR-FU/TNK	.02	
TRPO	ESFMGG15A	D6TA	9240 EA		0KGE1002012	INSULATOR-FU/TNK	.00	
TRPO	ESFMGG1A	D6HT	29885 AA		0KHA2202362	GASKET-BRK VAC PMP MNT	.00	
TRPO	ESFMGG1A				0KHA2203370	GASKET-BRK VAC PMP MNT	.00	
ENGINE	ESFMGG1A	C3TE	1946 A		0C3A0534010	GASKET-COMPRESSOR AIR BRAKE	9999.99	
ENGINE	ESFMGG1A	C6TE	6859 A		0C3A0534010	GASKET-OIL FILTER BY-PASS VLV NUT	9999.99	
EED	ESFMGG1A	C8DP	1" A829 A		*D9A1407312 NB	GASKET-WATER GEAR CVR	.00	
EED	ESFMGG1A				*D9L1407043 JR	GASKET-WATER GEAR CVR	.00	
EED	ESFMGG1A				*D9L1407291 MS	GASKET-WATER GEAR CVR	.00	
TRANS	ESFMGG1A	E07H	78402 AA		0E7H0701705	GASKET-TRANS CTR SHFT FT BRG RET	9999.99	
ENGINE	ESFMGG1A	D74E	6840 AA		0C3A0554001	GASKET-OIL FILTER ADAPTER	.00	
ENGINE	ESFMGG1A	D34E	8255 CA		0CNE2303902	GASKET-WTR OUT-CONNECTION	.02	
ENGINE	ESFMGG1A	C6AE	6521 A		0C3A0511015	GASKET-VALVE PUSH ROD COVER	.00	
ENGINE	ESFMGG1A	D7AE	6584 AA		0C3A0538045	GASKET-VLV R/A COVER	.00	
ENGINE	ESFMGG1A	D7BE	6594 AA		0C3A0538020	GASKET-VLV ROCKER ARM COVER	.00	
ENGINE	ESFMGG1A	C0DE	6710 B		0C3A0538020	GASKET-OIL PAN RH	.00	
ENGINE	ESFMGG1A	C9DE	6710 B		0C3A0538060	GASKET-OIL PAN RH	.00	
ENGINE	ESFMGG1A	D5VE	6710 AA		0C3A0538019	GASKET-OIL PAN RH	.00	
ENGINE	ESFMGG1A	C0DE	6711 B		0C3A0538025	GASKET-OIL PAN LH	.00	
ENGINE	ESFMGG1A	C6AE	6711 B		0C3A0538045	GASKET-OIL PAN LH	.00	
ENGINE	ESFMGG1A	C9DE	6711 B		0C3A0538065	GASKET-OIL PAN LH	.00	
ENGINE	ESFMGG1A	D5VE	6711 AA		0C3A0538029	GASKET-OIL PAN LH	.00	
ENGINE	ESFMGG1A	C61E	6625 A1		0C3A0538035	GASKET-O/P INLET TBE FGE	.00	
ENGINE	ESFMGG1A	C9DE	6625 A1		0C3A0538020	GASKET-O/P INLET TBE FLGE	.00	
ENGINE	ESFMGG1A	D42E	6625 CB		0C3A0538010	GASKET-OIL PUMP INLET TUBE FLNG	9999.99	
ENGINE	ESFMGG1A	E01E	6625 AA		0C3A0538025	GASKET-OIL PUMP I/LET TUBE FLANGE	.00	
ENGINE	ESFMGG1A	C61E	6659 AT		0C3A0540035	GASKET-OIL PUMP TO BLOCK	.00	

8001 1368



Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS/NITRILE RUBBER

by Fantasy **ESP-M8G55-A**

1. SCOPE

The material defined by this specification is a sheet of asbestos fiber and nitrile rubber, highly compressed to produce maximum density and relatively impervious structure.

2. APPLICATION

This specification was released originally for material used where resistance to high temperature and fuel is required, and where good recovery characteristics from swelling due to temperature and fuel is desired, i.e., gasket for the carburetor power valve.

3. REQUIREMENTS

All tests and conditioning shall be conducted in accordance with ASTM F 104, Type 1, class 1, unless otherwise specified.

3.1 COMPRESSIBILITY
(ASTM F 36, 5000 psi (34.5 MPa) load)

15 - 30%

Recovery, min

40%

3.2 TENSILE STRENGTH, min

2000 psi (13.8 MPa)

3.3 IMMERSION IN LIQUIDS

Immersion Fluid	Test Conditions	Thickness Change, max	Weight Change, max	Tensile Strength Loss, max	Compressibility
ASTM Oil No. 1	5 h, 149°C	13%	-	20%	0-35%
ASTM Oil No. 3	70 h, 100°C	20%	-	30%	0-40%
ASTM Fuel "B"	70 h, 21-30°C	18%	-	-	-
Motorcraft Anti-Freeze & Water (50/50)	70 h at boiling	25%	55%	-	-
Water	70 h, 100°C	20%	-	-	-

3.4 FLEXIBILITY FACTOR "F"

Must pass test

As received

12

Oven Aged
(70 h at 100°C)

16

Oil Aged
(ASTM Oil No. 1, 5 h at 149°C)

16

Date	Para. No.	Revisions
1978 07 13		Metricated, Renumbered & Retyped CF4A-RD 567/68 <i>[Signature]</i>
1963 06 25		Released F6-1073

B001 1329

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3.5 **COMPRESSION SET, max**
(ASTM D 395, Method "A", 22 h at 70 $\pm$ 1°C)

15%

3.6 **HEAT AGED**
(22 h at 149°C)

Compressibility Change

$\pm$ 20%

Recovery

-100 to + 30%

Tensile Strength (AMD) Change

0 to + 75%

Thickness Change

$\pm$ 3%

All tests performed on samples preconditioned 1 h at 100°C, cooled to room temperature in a desiccator over calcium chloride.

3.7 **SUPPLIER'S RESPONSIBILITY**

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. **APPROVAL OF SUPPLIERS**

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

A 689 B

ARMSTRONG

AN 890

L 180 A

LATEX FIBER INDUSTRIES

NA 526

29551 GREENFIELD

SOUTHFIELD, MICH. 48076

PEO

FILE CONTROL NUMBER

COMMENT

51001 1331



Engineering Material Specification

Material Name

Specification Number

OIL SEAL, ASBESTOS/RUBBER

E

ESE-M8G59-A

NO PART X REF.

1. SCOPE

The material defined by this specification is an elastomeric bonded, compressed asbestos sheet.

2. APPLICATION

This specification was released originally for material used where resistance to high temperature and oil is required and the amount of swell is controlled, i.e., seal for rear main bearing cap.

3. REQUIREMENTS

All tests are to be conducted on original sheet thickness, in accordance with ASTM F 104, Type 1, unless otherwise specified.

3.1 COMPRESSIBILITY

7 - 17%

(ASTM F 36, Procedure "A", except the test specimen shall be loaded as shown)

Recovery, min

40%

LOAD



3.2 TENSILE STRENGTH, min

3000 psi (20.7 MPa)

(Jaw spacing, approximately 1 in (25 mm))

3.3 IMMERSION IN LIQUIDS

Thickness change shall be measured with 9 ± 0.1 oz (2.50 $\pm$ 0.03 N) load on gage before immersion and 3 ± 0.1 oz (0.83 $\pm$ 0.03 N) load on gage after immersion using a presser foot diameter of 0.25 ± 0.01 in (6.4 $\pm$ 0.3 mm).

Date	Para. No.	Revisions
1978 11 15		Metricated, Renumbered & Retyped = CE3H-AD7E244C-E Supp # 11
1963 10 11		Released E7-2840

Eng Res
June 77 3948-a

8001 1332

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Immersion Fluid

Test Conditions

Thickness Change

ASTM Oil No. 1

30 min at 149°C
60 min at 149°C
180 min at 149°C5 - 10%
9 - 14%
14 - 25%

ASTM Oil no. 3

30 min at 149°C
60 min at 149°C
180 min at 149°C15 - 30%
20 - 50%
35 - 70%

ASTM Reference Fuel "A"

30 min at 23 + 2°C

15 - 25%

ASTM Reference Fuel "B"

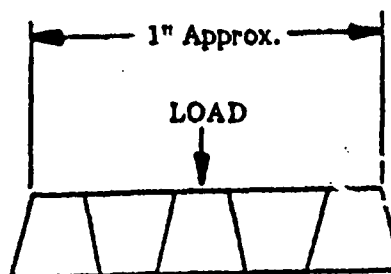
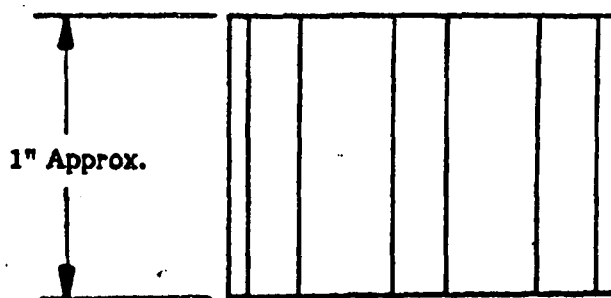
30 min at 23 + 2°C

30 - 40%

3.4 COMPRESSION SET, max
(ASTM D 395, Method "A", 22 h at 70 + 1°C,
except 5 test specimens are used and arranged
in the following manner)

9%

Conversion Table
1 in (25 mm)





3.5 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

R 075

RAYBESTOS MANHATTEN

F-53



Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS (LONG FIBER)/RUBBER

Empy

ESE-M8G62-A

1. SCOPE

The material defined by this specification is a rubber bonded, compressed asbestos sheet with at least 25% of the asbestos being spinning grade.

2. APPLICATION

This specification was released originally for material used where resistance to high temperature and oil is required and the amount of swell with no disintegration is controlled, i.e., gasket for intake manifold and pressed metal covers.

3. REQUIREMENTS

All tests shall be conducted in accordance with ASTM F 104, Type 1, unless otherwise specified.

3.1 COMPRESSIBILITY (ASTM F 36)

7 - 17%

Recovery, min

40%

3.2 TENSILE STRENGTH, min

2500 psi (17.2 MPa)

3.3 IMMERSION IN LIQUIDS

Thickness change shall be measured with 9 ± 0.1 oz (2.50 ± 0.03 N) load on gage before immersion and 3 ± 0.1 oz (0.83 ± 0.03 N) load on gage after immersion using a presser foot diameter of 0.25 ± 0.01 in (6.4 ± 0.3 mm).

Immersion Liquid	Test Conditions	Thickness Change, %			
		1/64 in (0.4 mm)	1/32 in (0.8 mm)	3/64 in (1.2 mm)	1/16 in (1.6 mm)
ASTM Oil No. 1	5 h at $149 \pm 3^\circ\text{C}$	25-40	20-35	15-30	10-25
ASTM Oil No. 3	5 h at $149 \pm 3^\circ\text{C}$	70-95	60-85	50-75	45-70
ASTM Fuel "A"	5 h at $23 \pm 2^\circ\text{C}$	15-35	15-30	15-30	15-30
ASTM fuel "B"	5 h at $23 \pm 2^\circ\text{C}$	25-45	25-40	25-40	25-40

The minimum swell must be maintained for the storage life of the gasket for at least 1 year.

3.4 COMPRESSION SET, MAX

9%

(ASTM D 395, Method "A", 22 h at $70 \pm 1^\circ\text{C}$)

Date	Para. No.	Revisions
1978 01 14		Metricated, Renumbered & Retyped CE3H-RD 78 2440-4
1963 09 10		Released E7-2788

Eng Res
June 77 3948-a

8801 1335

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- 3.5 The material must be branded with the manufacturer's trademark and style number. The color of the material and branding ink must be on record and cannot be changed.

3.6 **SUPPLIER'S RESPONSIBILITY**

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. **APPROVAL OF SUPPLIERS**

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

D 276 A	DETROIT GASKET	DG 1431
G 832 A	GREENE, TWEED & CO. 1761 1ST NAT. BANK BLDG. DETROIT, MICH. (NORTH WALES, PA. 215-256-9521	#2909
N 741 A	NICOLET INDUSTRIES, INC.	750
R 075	RAYBESTOS MANHATTEN	E-66
V 782 C	VICTOR	VICTOPAC 14

CEO

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Engineering Material Specification

Material Name

Specification Number

GASKET, CELLULOSE FIBER/ASBESTOS-RUBBER COATED *E m* **ESE-M8G63-A**

1. SCOPE

The material defined by this specification is a hard dense cellulose fiber core, covered on each side with oil and fuel resistant synthetic rubber impregnated asbestos paper.

2. APPLICATION

This specification was released originally for material used where heat insulation and spacer requirements are involved, i.e., gasket between carburetor and intake manifold.

3. REQUIREMENTS

3.1 DENSITY, min 60 lb/ft³ (960 kg/m³)
(ASTM F 104, Type 2 material)

3.2 COMPRESSIBILITY, min
(ASTM F 36, 4000 psi (27.6 MPa) load)

1/8 in (3.2 mm) thick and under 15%

Over 1/8 in (3.2 mm) to 1/2 in (12.7 mm) thick 10%

Recovery, min 55%
(Preload 10 psi (69 kPa), major 800 lb (3.6 kN) or
4000 psi (27.6 MPa) load on 0.505 in (12.83 mm)
presser foot)

3.3 TENSILE STRENGTH, min 2500 psi (17.2 MPa)
(ASTM F 39, 1 in (25 mm) wide specimen)

3.4 IMMERSION IN LIQUIDS
(ASTM F 104, 22 h at 23 ± 2°C, 1 x 2 in
(25 x 50 mm) specimen)

Immersion Fluid	Weight Change, max
ASTM Oil No. 1	+20%
ASTM Reference Fuel "B"	+30%
Distilled Water	+35%

3.5. SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

Date	Para. No.	Revisions
1978 07 17		Metricated. Renumbered & Retyped <i>CE3H-RD732440E SUPP 2</i>
1964 05 27		Released E7-3093



4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure 1-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

W 870 A

WOLVERINE

MS-121 WD/181

X A064

ASBERIT S/A (CESTARI)



Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS/NITRILE BUTADIENE RUBBER

a E n

ESF-M8G65-A

1. SCOPE

The material defined by this specification is a nitrile butadiene rubber, asbestos material with an antistick coating on both sides.

2. APPLICATION

This specification was released originally for material used as a gasket on the carburetor choke housing cover.

3. REQUIREMENTS

3.1 COMPRESSIBILITY, min 12%
(ASTM F 36, 1000 psi (6.9 MPa) load)

Recovery, min 40%

3.2 TENSILE STRENGTH, min 2000 psi (13.8 MPa)
(ASTM F 104, Type 1)

3.3 IMMERSION IN LIQUIDS
(ASTM D 471, 22 h at $23 \pm 2^\circ\text{C}$)

Immersion Fluid Weight Change, max

ASTM Oil No. 3 40%

ASTM Reference Fuel "B" 35%

Water 40%

3.4 SURFACE COATING Must not stick

Test Method: A 5/8 in (15.9 mm) I.D. x 1-1/2 in (38.1 mm) O.D. test specimen is clamped between 2 discs of 17/32 in (13.5 mm) I.D. x 2 in (51 mm) O.D. aluminum plates (maximum thickness 0.062 in (1.57 mm) backed by 1/2 in (12.7 mm) steel plates. A 1/2 in (12.7 mm) steel bolt is inserted through the hole and a nut put on it. Tighten the bolt to 700 in.lb (79 N.m). Heat the assembly to $149 \pm 3^\circ\text{C}$ for 5 h. Remove and allow to cool to room temperature. The specimen shall come off the aluminum without tearing.

3.5 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS (OVER)

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

Date	Para. No.	Revisions
1975 10 17	--	Metricated, Renumbered & Retyped CESM-K0752470E-SUPP #1
1964 03 02		Released FG-126R

Page 1 of 1

Eng Res
June 77 3848-a

8001 1342

F 268 A

FEDERAL - MOGUL CORP.

VELDESTOS 250

SOUTHFIELD, MICH. 48075
354-7700 or 7874

V 782 C

VICTOR

ASBESTOPAC 232

W 870 A

WOLVERINE

MS 181 - GRADE
NA 6000

9001 1343

JUN 21, 1979

PEO	MATERIAL	PREFIX	BASE	SUFFIX	CROSS REFERENCE - MATERIAL/PART NUMBER SEQ.	DESCRIPTION	WEIGHT	PAGE 1355 COMMENT
ENGINE	ESLWGG2A	D42E	9439 AA	0C3AC317010		GASKET-INT MAN TO CYL HD	.00	
ENGINE	ESLWGG2 A	HISM	9441 A6F	1C3AD406010		GASKET-INT MANIFOLD TO CYL HD	9999.99	
ENGINE	ESLWGG3A	D9EE	9447 AA	0C3ACB16080		GASKET-CAPR TO INT MANIFOLD	.00	
ENGINE	ESLWGG3-A	ECDE	9C477 BA	0C3ACB17081		GASKET-CAPR TO INT MAN SPCR	.00	
CHASSIS	ESLWGG4B	D89C	20321 AA	0B2W0406320		INSULATOR-FRT WHL BRK OTR	9999.99	
CHASSIS	ESLWGG4B			1B2W0406352		INSULATOR-FRT WHL BRK OTR	9999.99	
CHASSIS	ESLWGG4B	D9AC	20321 AA	0B2W0406322		INSULATOR-FRT WHL BRK SHOE-OTR	9999.99	
CHASSIS	ESLWGG4B			1B2W0406344		INSULATOR-FRT WHL BRK SHOE-OTR	9999.99	
CHASSIS	ESLWGG4B	D92C	20321 AB	0B2W0406343		INSULATOR-FRT WHL BRK-OTR	9999.99	
CHASSIS	ESLWGG4B			1B2W0406344		INSULATOR-FRT WHL BRK-OTR	9999.99	
CHASSIS	ESLWGG4B	F1EC	20321 AA	1B2W0406307		INSUL-FRT WHL BRK SHOE-OUTER	9999.99	
CHASSIS	ESLWGG4B	D9AC	20325 AB	0B2W0406302		INSUL-FRT WHL BRK SHOE-INNER	9999.99	
CHASSIS	ESLWGG4B			1B2W0406302		INSUL-FRT WHL BRK SHOE-INNER	9999.99	
CHASSIS	ESLWGG4B	D92C	20325 AA	0B2W0406301		INSULATOR-FRT WHL BRK INR	9999.99	
CHASSIS	ESLWGG4B			1B2W0406301		INSULATOR-FRT WHL BRK INR	9999.99	
CHASSIS	ESLWGG4B	D92C	20325 AB	0B2W0406393		INSUL-FRT WHL BRK SHOE INNER	9999.99	
CHASSIS	ESLWGG4B			1B2W0406393		INSUL-FRT WHL BRK SHOE INNER	9999.99	
CHASSIS	ESLWGG4B	F1EC	20325 AA	1B2W0406312		INS-FRT WHL BRK-INNER	9999.99	
CHASSIS	ESLWGG5A	D12A	3A472 AA	0B1A0401610	DE	GSKT-FRT SUSP LOWER ARM BALL JT	.00	
CHASSIS	ESLWGG5A			0B1A0401610	DE	GSKT-FRT SUSP LOWER ARM BALL JT	.00	
CHASSIS	ESLWGG5A			1B2W0406013		GSKT-AGE COMP HEAD	.00	
CCD	ESLWGG5A	D4AH	1B2W0406013			GASKET CYL HD	.00	
ENGINE	ESLWGG73A	D2AE	6051 A1A	0C3A0204035		GSK-CYL HEAD	.00	
ENGINE	ESLWGG73A	D4AE	6051 A1A	0C3A0204060		GASKET CYLINDER HEAD	.00	
ENGINE	ESLWGG73A	D7JE	6051 B0	0C3A0202050		GASKET-CYL HD	.00	
ENGINE	ESLWGG73-A	F0SE	6051 A1D	0C3A0209157		GASKET-CYL HD	.00	
ENGINE	ESLWGG73-A	F0SE	6051 A2D	0C3A0209147		GASKET-CYL HD	.00	
ENGINE	ESLWGG73-A	F0SE	6051 A3D	0C3A0202138		GASKET-CYL HD	.00	
TRPO	ESLWGG74A	D7MT	10725 AB	0KHA102634 A		INS-OUT M OXN	.00	
CHASSIS	ESLWGG76A	C2DA	2A472 C	0B2W0406111	CJ	GASKET-FRT SUSP LWR ARM BALL JT	.00	
TRANS	ESLWGG81-A	C6AR	7051 A1	0E7W0703582		GSKT-TRANS IMP SHFT BRG RET	9999.99	
TRANS	ESLWGG81-A	D91R	7051 A1A	0E7W0703585		GASKET-INPUT SHAFT BRG RETAINER	9999.99	
TRANS	ESLWGG81-A	1AAA	7051 A1	0E7W0703977		GSKT-TRANS IMP SHFT BRG RET	9999.99	
DEPE	ESLWGG85A	D5UB	22770465 AA	0AGE320251		WIP ASY RR LP OENG	.16	
EED	ESLWGG85A	C5EF	10E23 A	0B2W0406115 M		GSKT-ALT BRG COVER	.00	
DEPE	ESLWGG85A	D5UB	22770464 AA	0AGE3204250		WIP ASY RR LP OENG	.16	
DEPE	ESLWGG85A	F0TB	5542507 AB	0AGE3207053		WIP ASY SHFT O/S FIN	3.72	
ENGINE	ESLWGG87A	CODE	5701 A	0C3A0100015		SEAL-GRIND SP OIL	.00	
ENGINE	ESLWGG87A	C9DE	5701 A	0C3A0100046		SEAL-GRIND REAR OIL	.00	
CHASSIS	ESLWGG91A	D42A	A055 AA	0B2W0406007 C		GASKET-ENGINE COVER APPLIQUE	.00	
CHASSIS	ESLWGG91A			0B2W0406007 C		GASKET-ENGINE COVER APPLIQUE	.00	
ENGINE	ESLWGG93A	C9VF	6020 A	0C3A0204050		GASKET-CYLINDER FRT COVER	.00	
ENGINE	ESLWGG93A	D3UE	6020 AA	0C3A0204050		GASKET-CYL FRONT COVER	.00	
ENGINE	ESLWGG93-A	D9AE	6020 BA	0C3A0204126		GASKET-CYL FRONT COVER	.00	
ENGINE	ESLWGG93-A	D9TE	6020 AA	0C3A0204051		GASKET-CYL FRONT COVER	.00	
TRPO	ESLWGG93A	D9VA	BK051 B	0KHA2201222		GSKT-FRT SHFT PIP	.00	
ENGINE	ESLWGG93A	C5GE	B507 A	0C3A0204020		GASKET-WATER PUMP	.00	
ENGINE	ESLWGG94A	C8SE	9903 A	0C3A0203010		GASKET-THERM CHOK HEAT SPLY COVER	.00	
ENGINE	ESLWGG94A	D1AE	9903 AA	0C3A0203005		GASKET-THERM CHK HEAT SPLY CVR UPR	.00	
EED	ESLWGG96A	D2AF	12AG76 AA	0B2W0406012 H		GASKET-ENG AIR TEMP SENSOR	.00	
EED	ESLWGG96A			0B2W0406012 H		GASKET-ENG AIR TEMP SENSOR	.00	
EED	ESLWGG96A			0B2W0406012 H		GASKET-ENG AIR TEMP SENSOR	.00	
EED	ESLWGG96A			0B2W0406012 H		GASKET-ENG AIR TEMP SENSOR	.00	
CCD	ESLWGG96A	D2AH	100872 AA	0B2W0406012 H		GASKET-ENG AIR TEMP SENSOR	.00	
TRPO	ESLWGG96A	D2IP	7056 A	0KHA07C1030		GASKET-TRANS OUTPUT SHFT BRG RET	.00	
TRPO	ESLWGG96A			0KHA07C1041		GASKET-TRANS OUTPUT SHFT BRG RET	.00	
ENGINE	ESLWGG103A	H15F	B507 A2A	1C3A0204011		GASKET-WATER PUMP	9999.99	
CHASSIS	ESLWGG106A	D2DA	20321 BA	0B2W0406010		INSUL-FRT WHL BRK	9999.99	

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PQ



Engineering Material Specification

Material Name

Specification Number

GASKET, STEEL CORE-ASBESTOS/RUBBER BINDER

N

ESN-M8G67-A

NO PART X REF.

1. SCOPE

The material defined by this specification consists of a low carbon steel core covered on two sides with asbestos and synthetic rubber binder.

2. APPLICATION

This specification was released originally for material used on engines as a head gasket, where high compressive strength is required.

3. REQUIREMENTS

3.1 GASKET CONSTRUCTION

Consists of a perforated low carbon steel core with asbestos and synthetic rubber binder mechanically bonded to each side of the core. Grommets of rustless steel, copper or carbon are used as required.

3.1.1 Steel Core

Low carbon

3.1.2 Fabrication

The asbestos and synthetic rubber binder shall be plied uniformly on each side of the steel sheet core to meet the requirements of the application. The thickness of the components shall be as specified on engineering drawing.

3.2 TESTING

3.2.1 Load Deflection, Thickness Change

15-30%

Test Method: Compress 1 in² (645 mm²) sample for 5 min under a load of 5000 ps. (34.5 MPa) then measure thickness change from original dimension.

3.2.2 Immersion in Liquids
(ASTM D 471)

Immersion Fluid

Test Conditions

Thickness Change, max

Ethylene Glycol and
water 50/50

at boiling

+15%*

Alcohol and water 50/50

at boiling

+15%*

ASTM Reference
Fluid "A"

23 ± 2°C

*

Date	Part No.	Revisions
1978 11 21		Metricated, Renumbered & Rekeyed EMT-I-770250-C
1963 10 26		Released

Eng Res
June 77 394B-a

R001 1345

PQ

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Immersion Fluid	Test Conditions	Thickness Change, max
Water	24 h at boiling	•

• After immersion in above fluids, the material shall not disintegrate or become soft and spongy.

3.3 - SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

" NO SOURCES INDICATED "



Engineering Material Specification

Material Name

Specification Number

**GASKET, STEEL CORE-ASBESTOS/NITRILE BUTADIENE
RUBBER BINDER-COATED**

**E u ESE-M8G72-A
NO PART X REF.**

1. SCOPE

The material defined by this specification consists of a low carbon steel core covered on both sides with asbestos and nitrile butadiene rubber binder. The assembly is coated with an antistick coating.

2. APPLICATION

This specification was released originally for material used for cylinder head gaskets where high temperature and antistick properties are required.

3. REQUIREMENTS

3.1 CONSTRUCTION

3.1.1 Steel Core

Cold rolled low carbon 0.0065-0.0075 in (0.165-0.190 mm)

3.1.2 Fabrication

3.1.2.1 Asbestos and Nitrile Butadiene Rubber Binder

Shall be plied uniformly and bonded to each side of the steel core to meet the requirements of the application.

3.1.2.2 Flanges - SAE-30304 Rustless Steel

3.1.2.3 Coating

The assembly shall be coated with a heat stable, noncarbonizing and nonoily parting film to meet the antistick and other requirements of the application.

The coating is applied to the gasket surface and shall not be removed as a continuous film.

Date	Part No	Revisions
1978 07 14		Metrication. Renumbered & Retyped CESM-AD 782440E
1980 04 10		Release E-2682

Eng. App. 3948-B
June 77

6001 1347

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**3.2 FINISHED GASKET**

3.2.1 Resilience As specified on engineering drawing
(FLTM BV 11-1)

3.2.2 Immersion in Liquids**Immersion Fluid****Test Conditions**

Water

70 h at boiling

ASTM Reference Fuel "B"

70 h at $23 \pm 2^{\circ}\text{C}$

ASTM Oil No. 3

70 h at $23 \pm 2^{\circ}\text{C}$ ESE-M97B18-C Long Life Coolant
and Water - 50/50

70 h at boiling

After immersion in above fluids, as specified, the asbestos shall be firm and must not separate from the steel core.

3.2.3 Heat Resistance
(FLTM BV 11-2)

Must separate easily and remain in an intact condition when compressed 15% minimum.

3.3 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

V 782 C VICTOR

VICTOCOR 200

(75-506)

(75-096)



Engineering Material Specification

Material Name

Specification Number

GASKET, STEEL CORE-ASBESTOS/RUBBER BINDER

E

ESE-M8G73-A

1. SCOPE

The material defined by this specification consists of a perforated low carbon steel core covered on each side with asbestos and synthetic rubber binder.

2. APPLICATION

This specification was released originally for material used on engines as a cylinder head gasket, where high compressive strength is required.

3. REQUIREMENTS

3.1 CONSTRUCTION

The gasket consists of a perforated low carbon steel core with a material consisting of asbestos and synthetic rubber binder glued and/or mechanically bonded to each side of the core. Grommets of rustless steel, copper or carbon steel are used as required.

3.1.1 Steel Core

Low carbon. Thickness and perforations as specified on engineering drawings.

3.1.2 Fabrication

The asbestos and rubber binder sheet shall be plied uniformly and bonded to each side of the steel core to meet requirements of the application, the thickness as specified on engineering drawing.

3.2 FINISHED GASKET

3.2.1 Resilience (FLTM BV 11-1)

As specified on engineering drawing

3.2.2 Immersion in Liquids

Immersion Fluid

Water
ESE-M97B18-A Long Life Coolant
and Water - 50/50
ASTM Reference Fuel "A"

Test Conditions

24 h at boiling
24 h at boiling

24 h at $23 \pm 2^{\circ}\text{C}$

After immersion in above fluids, as specified, the asbestos shall be firm and must not separate from the steel core.

Date	Para NC	Revisions
1978 07 14		Withdrawn. Renumbered & Retyped C-3H-RD 782440-E
1980 08 30		Revised E7-2777

Eng. Rev.
June 77 3948-a

8001 1349

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3.3 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

D 276 A

DETROIT GASKET

2019, 2019 & 2030

2019, 2029 & 2030

M 141 A

MCCORD CORP.

MCCORPAC II

V 782 C

VICTOR

VICTORCOR 150 & 160

W/ VICTOR 597 ANTI-STICK

JUN 21, 1978

PED

MATERIAL

PREFIX

BASE

MATERIAL CROSS REFERENCE - MATERIAL/PART NUMBER SEQ.

SUFFIX

FILE CONTROL NUMBER

DESCRIPTION

WEIGHT

PAGE 1355

COMMENT

ENGINE	ESI-MHG52A	D42E	9439	AA	0C3A0117010	GASKET-INT MAN TO CYL HD	.00	
ENGINE	ESI-MHG52 A	H15M	9441	A6F	1C3A0406089	GASKET-INT MANIFOLD TO CYL HD	9999.99	
ENGINE	ESI-MHG53A	D9EE	9447	AA	0C3A0816089	GASKET-CARB TO INT MANIFOLD	.00	
ENGINE	ESI-MHG53-A	E0DE	95477	BA	0C3A0317081	GSKT-CARB TO INT MAN SPCR	.00	
CHASSIS	ESI-MHG54B	D6BC	20321	AA	0B2W0406323	INSULATOR-FRT WHL BRK OTR	9999.99	
CHASSIS	ESI-MHG54B				1B2W0406352	INSULATOR-FRT WHL BRK OTR	9999.99	
CHASSIS	ESI-MHG54B	D9AC	20321	AA	0B2W0406392	INSULATOR-FRT WHL BRK SHOE-OTR	9999.99	
CHASSIS	ESI-MHG54B				1B2W0406344	INSULATOR-FRT WHL BRK SHOE-OTR	9999.99	
CHASSIS	ESI-MHG54B	D92C	20321	AA	0B2W0406393	INSULATOR-FRT WHL BRK-OTR	9999.99	
CHASSIS	ESI-MHG54B				1B2W0406344	INSULATOR-FRT WHL BRK-OTR	9999.99	
CHASSIS	ESI-MHG54B	F11C	20321	AA	1B2W0406307	INS-FRT WHL BRK SHOE-INNER	9999.99	
CHASSIS	ESI-MHG54B	D9AC	20525	AB	0B2W0406392	INSUL-FRT WHL BRK SHOE-INNER	9999.99	
CHASSIS	ESI-MHG54B				1B2W0406320	INSUL-FRT WHL BRK SHOE-INNER	9999.99	
CHASSIS	ESI-MHG54B	D9EC	20525	AA	0B2W0406324	INSULATOR-FRT WHL BRK INR	9999.99	
CHASSIS	ESI-MHG54B				1B2W0406308	INSULATOR-FRT WHL BRK INR	9999.99	
CHASSIS	ESI-MHG54B	D92C	20525	AB	0B2W0406493	INSUL-FRT WHL BRK SHOE INNER	9999.99	
CHASSIS	ESI-MHG54B				1B2W0406524	INSUL-FRT WHL BRK SHOE INNER	9999.99	
CHASSIS	ESI-MHG54B	F11C	20525	AA	1B2W0406312	INS-FRT WHL BRK-INNER	9999.99	
CHASSIS	ESI-MHG55A	D12A	3A472	AA	0B1A00101610	DE GSKT-FRT SUSP LOWER ARM BALL JT	.00	
CHASSIS	ESI-MHG55A				0B1A00101512	DE GSKT-FRT SUSP LOWER ARM BALL JT	.00	
CCO	ESI-MHG55A	D4AH	106871	AA	*WHL1405013	GSKT-A/C COMP HEAD	.00	
ENGINE	ESI-MHG73A	F2AE	6051	A1A	0C3A0204035	GASKET CYL HD	.00	
ENGINE	ESI-MHG73A	D4AE	6051	A1A	0C3A0204060	GSK-CYL HEAD	.00	
ENGINE	ESI-MHG73A	F7JE	6051	B3	0C3A0204050	GASKET CYLINDER HEAD	.00	
ENGINE	ESI-MHG73-A	F0SE	6051	A1D	0C3A0204057	GASKET-CYL HD	.00	
ENGINE	ESI-MHG73-A	F0SE	6051	A2D	0C3A0204047	GASKET-CYL HD	.00	
ENGINE	ESI-MHG73-A	F0SE	6051	A3D	0C3A0204048	GASKET-CYL HD	.00	
TRPO	ESI-MHG74A	D7HT	10726	AB	0KHA102834	A INS-BATT H DYN	.00	
CHASSIS	ESI-MHG76A	D2DA	3A472	C	0B2A00101614	CU GASKET-FRT SUSP LWR ARM BALL JT	.00	
TRANS	ESI-MHG81-A	D6AR	7051	A1	0E7W0703582	GSKT-TRANS INP SHFT BRG RET	9999.99	
TRANS	ESI-MHG81-A	D91R	7051	A1A	0E7W0703585	GASKET-INPUT SHAFT BRG RETAINER	9999.99	
TRANS	ESI-MHG81-A	TAAA	7051	A1	0E7W0703977	GSKT-TRANS INP SHFT BRG RET	9999.99	
DEFE	ESI-MHG85A	D5UB	22279	AA	0AGE3301251	WING ASY RE LP DRNG	.16	
DEO	ESI-MHG85A	D5UF	10623	A	*D9L1302115	M GSKT-ALT RING COVER	.00	
DEFE	ESI-MHG85A	D5UB	22279	AA	0AGE3301250	WING ASY RE LP DRNG	.16	
DEFE	ESI-MHG85A	F0TB	8025	AA	0AGE3307053	WING ASY RE LP DRNG	3.72	
ENGINE	ESI-MHG87A	CODE	6701	A	0C3A0160015	SEAL-PANIC RR OIL	.00	
ENGINE	ESI-MHG87A	C0DE	6701	A	0C3A0160045	SEAL-CRANKSHAFT REAR OIL	.00	
CHASSIS	ESI-MHG91A	D42A	1056	AA	0BDE0003002	C GASKET-WHEEL COVER APPLIQUE	.00	
CHASSIS	ESI-MHG91A				0BTE0003330	C GASKET-WHEEL COVER APPLIQUE	.00	
ENGINE	ESI-MHG93A	CRVE	6020	A	0C3A0100050	GASKET-CYLINDER FRT COVER	.00	
ENGINE	ESI-MHG93A	D3HE	6020	AA	0C3A0100055	GASKET-CYL FRONT COVER	.00	
ENGINE	ESI-MHG93-A	D9AC	6020	BA	0C3A0100125	GASKET-CYL FRONT COVER	.00	
ENGINE	ESI-MHG93-A	IRTE	6020	AA	0C3A0100031	GASKET-CYL FRONT COVER	.00	
TRPO	ESI-MHG93A	D0HA	8K051	B	0KHA2201222	GSKT RAC GIFT PIP	.00	
ENGINE	ESI-MHG93A	C5OE	8507	A	0C3A0310020	GASKET-WATER PUMP	.00	
ENGINE	ESI-MHG94A	C8SE	9903	A	0C3A0300010	GASKET-THERM CHOKE HEAT SPLY COVER	.00	
ENGINE	ESI-MHG94A	D1AE	9903	AA	0C3A0300005	GASKET-THERM CHOKE HEAT SPLY CVR UPR	.00	
ELD	ESI-MHG96A	D9AF	12A676	AA	*D9A0306012	B GASKET-ENG AIR TEMP SENSOR	.00	
ELD	ESI-MHG96A				*D9A0306013	D GASKET-ENG AIR TEMP SENSOR	.00	
ELD	ESI-MHG96A				*D9A0306040	D GASKET-ENG AIR TEMP SENSOR	.00	
ELD	ESI-MHG96A				*D9A0306041	E GA SKT-ENG AIR TEMP SENSOR	.00	
CCO	ESI-MHG99A	D4AH	190872	AA	*WHL1405042	GSKT-A/C COMP CYLINDER BLK	.00	
TRPO	ESI-MHG99A	D0TP	7086	A	0KGA0701050	GASKET-TRANS OUTPUT SHFT BRG RET	.00	
TRPO	ESI-MHG99A				0KHA0701049	GASKET-TRANS OUTPUT SHFT BRG RET	.00	
ENGINE	ESI-MHG103A	B1SF	8507	A2A	1C3A0919119	GASKET-WATER PUMP	9999.99	
CHASSIS	ESI-MHG108A	D20A	20321	BA	0B2W0495185	INSUL-FRT WHL BRK	9999.99	

A001 1351

Pg

Engineering Material Specification

Material Name

Specification Number

GASKET, WOVEN ASBESTOS-JUTE CENTER

E " ESE-M8G87-B

1. SCOPE

The material defined by this specification is a braided packing construction of asbestos yarns, organic fiber yarns, suitably reinforced and impregnated with lubricant and graphite.

2. APPLICATION

This specification was released originally for material used as an engine rear crankshaft oil seal packing.

3. REQUIREMENTS

As received. After installation, only asbestos content and construction required.

3.1 CONSTRUCTION

The packing shall be a construction of an outer braided jacket, inner braided jacket and core. The yarns of the inner and outer jacket are impregnated prior to braiding with a lubricant which is certified by the supplier to be fortified with microcrystalline waxes and polyethylene and must be free of soap. Assembly to be surface coated with graphite.

3.1.1 Outer Jacket (ASTM D 299)

24 ends (strands) of "S" twist, No. 1520 asbestos, Class "C" yarn, commercial grade (72.5-80% by weight chrysotile asbestos and balance organic matter).

3.1.2 Inner Jacket (ASTM D 681)

8 ends (strands) of "S" twist, 2 ply, 15 lb (6.8 kg) commercial grade jute chain yarn.

3.1.3 Core (ASTM D 681)

3 longitudinal strands of 35 lb (15.9 kg) commercial grade jute roving and an identifying strand of red cotton thread.

3.1.4 Lubricant, Drop Melting Point, min 74°C (ASTM D 127)

Date	Para. No.	Revisions
ATF 12 22		Metricated, Renumbered & Retyped = CE3H-RD7F244C-E
1969 03 04		Released CE3X-DR604621-Y

**3.1.5 Surface Finish
(ASTM D 1553)**

The outer jacket surface is to be coated with a synthetic powdered graphite of 98% minimum purity (2% maximum incineration ash).

3.2 ASSEMBLY**3.2.1 Composition by Weight (See para 5.2)**

Outer Jacket	41.2 - 47.2%
Inner Jacket & Core	21.8 - 25.8%
Lubricant & Grease	Balance

3.2.2 Weight 3.3-3.7 lb/100 Lineal ft (49-55 g/Lineal m)

Samples shall be randomly selected from each production shipment lot with a maximum of 15 pieces from each shipment container. Samples are to be cut to $5 + 1/16$ in ($127 + 1.6$ mm) long and a minimum of 25 lineal ft (7.6 m) must be used.

3.2.3 Load Deflection 400-1100 lb (1.8-4.9 kN)

The load required to compress a $5 + 1/16$ in ($127 + 1.6$ mm) long section of the material to the 0.025 in (0.64 mm) reference height. The fixture is defined in para 5.1.

3.3 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

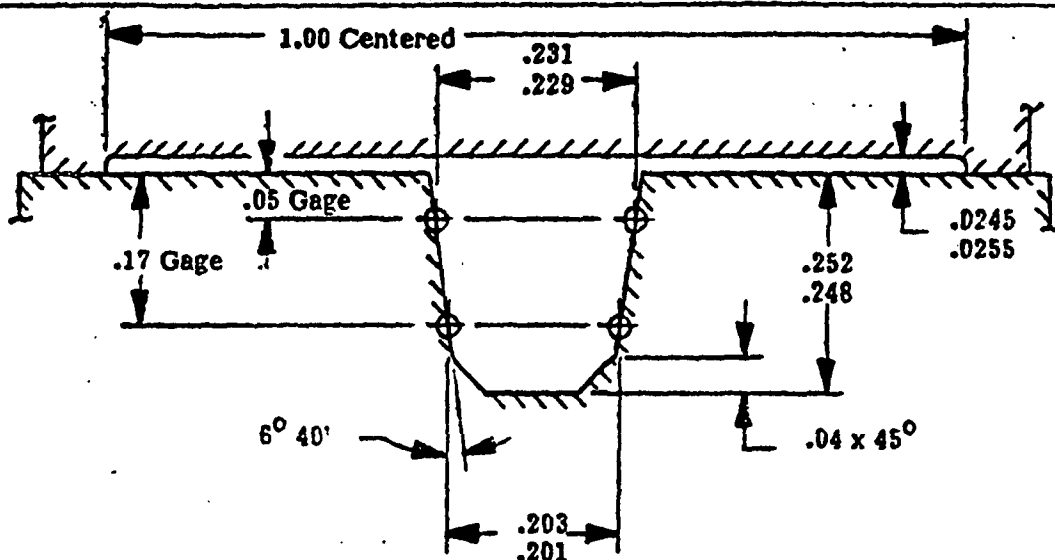
Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

5. GENERAL INFORMATION

This information is for direction of the user and is not a requirement for the supplier.

5.1 LOAD DEFLECTION FIXTURE

- A test sample shall be placed in a load compression fixture, as described herein.
- The minimum, maximum and average load required to compress the test specimens to a control height of 0.025 in (0.64 mm) reference shall be recorded.



Fixture to be 6 in (150 mm) long and upper and lower segments to be doweled for loose fit.

Conversion Chart
in (mm)

0.0245 (0.622)	0.203 (5.16)
0.0255 (0.648)	0.229 (5.82)
0.04 (1.0)	0.231 (5.87)
0.05 (1.3)	0.248 (6.30)
0.17 (4.3)	0.252 (6.40)
0.201 (5.11)	1.00 (25.4)

5.2 EXTRACTION PROCEDURE FOR COMPONENT COMPOSITION
(ASTM D 681)

1. Before extraction, separate a 2-3 in (50-75 mm) specimen into individual components (core, inner jacket, and outer jacket).
2. Weigh the 3 components collectively and record ~~as~~ the original weight.
3. Place the 3 components in a 250 mL beaker and add 150 mL of toluene or benzene.
4. Place the beaker on a hot plate under a hood and boil until the solvent is reduced to approximately 50 mL.
5. Weigh a previously oven dried #410 filter paper and record the weight.
6. Pour the heated solvent through the filter paper to collect the graphite.
7. Add fresh 150 mL of solvent to the beaker containing the components and repeat the above 3 steps, filtering through the same paper. This procedure of extraction is repeated until the packing is clean of all graphite and lubricant as indicated by a clear solvent. A minimum of 3 times is required.



8. The extracted packing components and the filter paper containing the graphite are placed in a 110°C oven and dried for 1 h (graphite is to be used for graphite analysis).
9. After cooling the above to room temperature in a desiccator, weigh each component and the filter paper containing the graphite.
10. Calculate the percent of each component using the original weight as a bases. The lubricant is calculated by difference.

5.3 ASBESTOS DETERMINATION (ASTM D 1918)

To determine the percent of asbestos and percent of organic matter in the outer jacket, the following procedure is used.

1. The extracted outer jacket from 5.2 is placed in a clean, weighed crucible and a burnout is performed in a 799-838°C muffle furnace for 1 h.
2. The ash is cooled to room temperature in a desiccator and weighed.
3. The original weight of asbestos is calculated using the following formulas.

$$4. \frac{\text{Ash Wt.} \times 0.86}{\text{Original Wt. of Asbestos}} = \text{Original Wt. of Asbestos}$$

$$5. \frac{\text{Orig. Wt. of Asbestos}}{\text{Orig. Wt. of Jacket}} \times 100 = \% \text{ Asbestos}$$

$$6. 100 - \% \text{ Asbestos} = \% \text{ Organic Matter}$$

0.86 is a factor based upon a measured average loss of 14% water of crystallization when chrysotile asbestos is heated to a temperature of 799-838°C.

7. The total breakdown is calculated by using the original weight of the package.

Organic Fiber Content = Wt. of core plus inner jacket, plus organic matter in outer jacket.

Asbestos Fiber Content = Original Wt. of asbestos in the yarn of outer jacket.

5.4 DEFINITIONS

Refer to ASTM D 123 for all term definitions in reference to packing fabrics.

C 765 A

COPELAND GIBSON PROD.

12950 CAPITAL

OAK PARK, MICH. 48237

JUN 21, 1979

REQ	MATERIAL	PREFIX	BASE	SUFFIX	MATERIAL CROSS REFERENCE - MATERIAL/PART NUMBER SEQ.	DESCRIPTION	WEIGHT	PAGE 1355 COMMENT
					FILE CONTROL NUMBER			
ENGINE	ESLWGG2A	D42E	9439	AA	0C3A0417010	GASKET-INT MAN TO CYL HD	.00	
ENGINE	ESLWGG2A	H1SM	9441	AGF	1C3A0406000	GASKET-INT MANIFOLD TO CYL HD	9999.99	
ENGINE	ESLWGG3A	D9EE	9447	AA	0C3A0816080	GASKET-CARB TO INT MANIFOLD	.00	
ENGINE	ESLWGG3-A	E0BE	9C477	BA	0C3A0317081	GSKT-CARB TO INT MAN SPCR	.00	
CHASSIS	ESLWGG4B	D8BC	2B321	AA	0B2W0406334	INSULATOR-FRT WHL BRK OTR	9999.99	
CHASSIS	ESLWGG4B				1B2W0406352	INSULATOR-FRT WHL BRK OTR	9999.99	
CHASSIS	ESLWGG4B	D9AC	2B321	AA	0B2W0406392	INSULATOR-FRT WHL BRK SHOE-OTR	9999.99	
CHASSIS	ESLWGG4B				1B2W0406344	INSULATOR-FRT WHL BRK SHOE-OTR	9999.99	
CHASSIS	ESLWGG4B	D02C	2B321	AB	0B2W0406393	INSULATOR-FRT WHL BRK-OTR	9999.99	
CHASSIS	ESLWGG4B				1B2W0406344	INSULATOR-FRT WHL BRK-OTR	9999.99	
CHASSIS	ESLWGG4B	F1FC	2B321	AA	1B2W0406307	INS-FRT WHL BRK SHOE-OUTER	9999.99	
CHASSIS	ESLWGG4B	D0AC	2B321	AB	0B2W0406393	INS-FRT WHL BRK SHOE-INNER	9999.99	
CHASSIS	ESLWGG4B				1B2W0406344	INS-FRT WHL BRK SHOE-INNER	9999.99	
CHASSIS	ESLWGG4B				0B2W0406393	INS-FRT WHL BRK SHOE-INNER	9999.99	
CHASSIS	ESLWGG4B	D92C	2B321	AB	0B2W0406393	INS-FRT WHL BRK SHOE INNER	9999.99	
CHASSIS	ESLWGG4B				1B2W0406393	INS-FRT WHL BRK SHOE INNER	9999.99	
CHASSIS	ESLWGG4B	F1EC	2B321	AA	1B2W0406393	INS-FRT WHL BRK-INNER	9999.99	
CHASSIS	ESLWGG4B	D12A	3A472	AA	0B1A0401610	GSKT-FRT SUSP LOWER ARM BALL JT	.00	
CHASSIS	ESLWGG4B				0B1A0401610	GSKT-FRT SUSP LOWER ARM BALL JT	.00	
CCD	ESLWGG4B	D0AH	1B0871	AA	1W01405013	GSKT-4-C (TOP) HEAD	.00	
ENGINE	ESLWGG7A	D2AE	6051	A1A	0C3A0204035	GASKET CYL HD	.00	
ENGINE	ESLWGG7A	D4AE	6051	A1A	0C3A0204060	GSK-CYL HEAD	.00	
ENGINE	ESLWGG7A	D7JE	6051	B0	0C3A0204050	GASKET CYLINDER HEAD	.00	
ENGINE	ESLWGG73-A	F0SE	6051	A1D	0C3A0204157	GASKET-CYL HD	.00	
ENGINE	ESLWGG73-A	F0SE	6051	A2D	0C3A0204147	GASKET-CYL HD	.00	
ENGINE	ESLWGG73-A	F0SE	6051	A2D	0C3A0204148	GASKET-CYL HD	.00	
TRPO	ESLWGG74A	D7HT	10726	AB	0K1A1002834	INS-BATT H GYM	.00	
CHASSIS	ESLWGG76A	D0CA	3A472	C	0B1A0401611	GSKT-FRT SUSP LWR ARM BALL JT	.00	
TRANS	ESLWGG81-A	D0AR	7051	A1	0E7W0703082	GSKT-TRANS INP SHFT BRG RET	9999.99	
TRANS	ESLWGG81-A	D41R	7051	A1A	0E7W0703085	GASKET-INPUT SHAFT BRG RETAINER	9999.99	
TRANS	ESLWGG81-A	TAAA	7051	A1	0E7W0703077	GSKT-TRANS INP SHFT BRG RET	9999.99	
DEFE	ESLWGG85A	D5UB	22770465	AA	0A0C0703051	WING ASY BR LP OPNG	.16	
EDD	ESLWGG85A	D5IF	10623	A	0A0C0703115	GSKT-ALT B COVER	.00	
DEFE	ESLWGG85A	D5UB	22770464	AA	0A0C0703050	WING ASY BR LP OPNG	.18	
DEFE	ESLWGG85A	F0TD	3347907	AWB	0A0C0703051	WING ASY BR LP OPNG	3.72	
ENGINE	ESLWGG7A	F0DE	6701	A	0C3A0180015	SEAL-ENGINE RR OIL	.00	
ENGINE	ESLWGG7A	F0DE	6701	A	0C3A0180045	SEAL-ENGINE REAR OIL	.00	
CHASSIS	ESLWGG91A	D42A	1A056	AA	0B1A0403092	GASKET-ENGINE COVER APPLIQUE	.00	
CHASSIS	ESLWGG91A				0B1A0403092	GASKET-ENGINE COVER APPLIQUE	.00	
ENGINE	ESLWGG93A	F0VE	6020	A	0C3A0180050	GASKET-CYLINDER FRT COVER	.00	
ENGINE	ESLWGG93A	D0UE	6020	AA	0C3A0180050	GASKET-CYL FRONT COVER	.00	
ENGINE	ESLWGG93-A	D0AC	6020	BA	0C3A0180124	GASKET-CYL FRONT COVER	.00	
ENGINE	ESLWGG93-A	D0TC	6020	AA	0C3A0180051	GASKET-CYL FRONT COVER	.00	
TRPO	ESLWGG93A	D0UA	8K051	B	0K1A0701722	GSKT-FRT SHFT PIP	.00	
ENGINE	ESLWGG93A	C5CE	8507	A	0C3A0180020	GASKET-WATER PUMP	.00	
ENGINE	ESLWGG94A	C8SE	9903	A	0C3A0180010	GASKET-THROAT CHOKER HEAT SPLY COVER	.00	
ENGINE	ESLWGG94A	D1AE	9903	AA	0C3A0180005	GASKET-THROAT CHK HEAT SPLY CVR UPR	.00	
EDD	ESLWGG95A	D0AF	12A675	AA	0A0C0703012	GASKET-FRT AIR TEMP SENSOR	.00	
EDD	ESLWGG95A				0A0C0703013	GASKET-FRT AIR TEMP SENSOR	.00	
EDD	ESLWGG95A				0A0C0703014	GASKET-FRT AIR TEMP SENSOR	.00	
EDD	ESLWGG95A				0A0C0703015	GASKET-FRT AIR TEMP SENSOR	.00	
CCD	ESLWGG95A	D0AH	1B0872	AA	1W01405042	GSKT-4-C (TOP) CYLINDER BLK	.00	
TRPO	ESLWGG95A	D0TP	7086	A	0K1A0701050	GASKET-TRANS OUTPUT SHFT BRG RET	.00	
TRPO	ESLWGG95A				0K1A0701049	GASKET-TRANS OUTPUT SHFT BRG RET	.00	
ENGINE	ESLWGG103A	F1SE	8507	A2A	1C3A0204119	GASKET-WATER PUMP	9999.99	
CHASSIS	ESLWGG103A	D02A	2B321	BA	0B2W0406393	INS-FRT WHL BRK	9999.99	



Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS/STEEL/ASBESTOS

A 2 u

ESA-M8G94-A

1. SCOPE

The material defined by this specification consists of laminated sheets of asbestos, steel and asbestos, respectively.

2. APPLICATION

This specification was released originally for material used as manifold gaskets or where resistance to water, gasoline or oil is not necessary.

3. REQUIREMENTS

3.1 CONSTRUCTION

Steel sheet with asbestos on both sides. The steel sheet is properly recessed and formed so as to have closely projecting tangs, which are deformed during processing and serve to close over and hold the asbestos to the metal without the use of cement. The asbestos shall also be forced into the cavities at the base of the tangs, thus allowing the asbestos coating on both sides of the metal to be united.

The sheet steel shall be formed so as to protect the outer edge of the gasket, but is not to be closed over the asbestos at the outer edge.

3.1.1 Steel Sheet

SAE 1010

3.1.2 Asbestos

Material

Must be a good grade of millboard, but not necessarily resistant to gasoline, oil or water absorption.

Fabrication

Shall be plied uniformly on both sides of the steel sheet.

Ignition Loss, max.
(ASTM F 104, 816°C)

40%

3.2 FINISHED PRODUCT

3.2.1 Surface

Shall be smooth, with no tangs protruding or noticeable to the touch. It must be flexible enough to permit rapid assembly.

Date	Para. No.	Revisions	
1979 01 10		Metriected, Renumbered & Retyped	CAH2 823385
1963 07 26		Released	AS2-343

F. C. F...

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June 77 3948-a

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3.2.2 Weight 10.5-12.5 oz/ft² (3.2-3.8 kg/m²)
(0.060 in (1.52 mm) nominal thickness)

3.2.3 Moisture, max 2%
(Condition samples at 102 ± 3°C in a convection oven to constant weight)

3.2.4 Graphite Coating

Shall have a good coat of graphite on both sides to prevent adhesion of foreign material to the surface.

3.3 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

D 276 A DETROIT GASKET

M 141 A McCORD CORP.

V 782 C VICTOR

JUN 21, 1979

REQ	MATERIAL	PREFIX	BASE	SUFFIX	FILE CONTROL NUMBER	DESCRIPTION	WEIGHT	COMMENT	
ENGINE	ES1MNG92A	D42E	9439	AA	0C3A0117010	GASKET-INT MAN TO CYL HD	.00		
ENGINE	ES1MNG92A	1115W	9441	A6F	1C3A0406080	GASKET-INT MANIFOLD TO CYL HD	9999.99		
ENGINE	ES1MNG93A	D0CE	9447	AA	0C3A0116080	GASKET-CALB TO INT MANIFOLD	.00		
ENGINE	ES1MNG93-A	F09C	9447	BA	0C3A0117001	GSKT-CALB TO INT MANIFOLD	.00		
CHASSIS	ES1MNG94B	083C	28321	AA	012W0406011	INSULATOR-FRT WHL BRK OTR	9999.99		
CHASSIS	ES1MNG94B				1B2W0406025	INSULATOR-FRT WHL BRK OTR	9999.99		
CHASSIS	ES1MNG94B	D94C	28321	AA	0B2W0406392	INSULATOR-FRT WHL BRK SHOE-OTR	9999.99		
CHASSIS	ES1MNG94B				1B2W0406344	INSULATOR-FRT WHL BRK SHOE-OTR	9999.99		
CHASSIS	ES1MNG94B	D92C	28321	AB	0B2W0406301	INSULATOR-FRT WHL BRK-OTR	9999.99		
CHASSIS	ES1MNG94B				1B2W0406301	INSULATOR-FRT WHL BRK-OTR	9999.99		
CHASSIS	ES1MNG94B	F11C	28321	AA	1B2W0406307	INS-FRT WHL BRK SHOE-INNER	9999.99		
CHASSIS	ES1MNG94B	D94C	28525	AB	0B2W0406192	INSUL-FRT WHL BRK SHOE-INNER	9999.99		
CHASSIS	ES1MNG94B				1B2W0406320	INSUL-FRT WHL BRK SHOE-INNER	9999.99		
CHASSIS	ES1MNG94B	D95C	28525	AA	0B2W0406121	INSULATOR-FRT WHL BRK INR	9999.99		
CHASSIS	ES1MNG94B				1B2W0406080	INSULATOR-FRT WHL BRK INR	9999.99		
CHASSIS	ES1MNG94B	D92C	28525	AB	0B2W0406493	INSUL-FRT WHL BRK SHOE INNER	9999.99		
CHASSIS	ES1MNG94B				1B2W0406521	INSUL-FRT WHL BRK SHOE INNER	9999.99		
CHASSIS	ES1MNG94B	F11C	28525	AA	1B2W0406517	INS-FRT WHL BRK-INNER	9999.99		
CHASSIS	ES1MNG95A	D12A	31472	AA	0B1A0401610	GSKT-FRT SUSP LOWER ARM BALL JT	.00		
CHASSIS	ES1MNG95A				0B1A0401519	GSKT-FRT SUSP LOWER ARM BALL JT	.00		
CHASSIS	ES1MNG95A	D11A	100871	AA	1W11055013	GSKT-ALC COMP HEAD	.00		
ENGINE	ES1MNG97A	D7AE	6051	A1A	0C3A0201035	GASKET CYL HD	.00		
ENGINE	ES1MNG97A	D7AC	6051	A1A	0C3A0201060	GSK-CYL HEAD	.00		
ENGINE	ES1MNG97A	D7AE	6051	00	0C3A0201050	GASKET CYLINDER HEAD	.00		
ENGINE	ES1MNG97A	F09E	6051	A1D	0C3A0209157	GASKET-CYL HD	.00		
ENGINE	ES1MNG97A	F09E	6051	A2D	0C3A0209147	GASKET-CYL HD	.00		
ENGINE	ES1MNG97A	F09E	6051	A3D	0C3A0209138	GASKET-CYL HD	.00		
TRPO	ES1MNG97A	D7HT	10726	AB	0KHA1402834	1.1-BATT H.OWN	.00		
CHASSIS	ES1MNG97A	D7SA	24472	C	0B1A0401614	GSKT-FRT SUSP LWR ARM BALL JT	.00		
TRANS	ES1MNG981-A	D6AR	7051	A1	0E7W0703982	GSKT-TRANS INP SHFT BRG RET	9999.99		
TRANS	ES1MNG981-A	D6TR	7051	A1A	0E7W0703985	GASKET-INPUT SHAFT BRG RETAINER	9999.99		
TRANS	ES1MNG981-A	TAAA	7051	A1	0E7W0703977	GSKT-TRANS INP SHFT BRG RET	9999.99		
DEFE	ES1MNG985A	D5UB	22275	A65	AA	DAGE3309751	710G ASY RE LP DRNG	.16	
EED	ES1MNG985A	C5FF	10621	A		*09L1302115	M	.00	
DEFE	ES1MNG985A	D5UB	22275	A64	AA	DAGE3309750	710G ASY RE LP DRNG	.16	
DEFE	ES1MNG985A	C0TB	95251	AWB		DAGE3309753	710G ASY RE LP DRNG	.16	
ENGINE	ES1MNG97A	CODE	6731	A		0C3A0168015	SEAL-PAUK RR OIL	.00	
ENGINE	ES1MNG97A	C2DE	6701	A		0C3A0169045	SEAL-CRKSHAFT REAR OIL	.00	
CHASSIS	ES1MNG91A	D42A	41135	AA		0B0E0803092	C	.00	
CHASSIS	ES1MNG91A					0B1E0803339	C	.00	
ENGINE	ES1MNG93A	CRVE	6020	A		0C3A0805050	GASKET-CYLINDER FRT COVER	.00	
ENGINE	ES1MNG93A	D3HE	6020	AA		0C3A0805055	GASKET-CYL FRONT COVER	.00	
ENGINE	ES1MNG93A	D3AE	6020	BA		0C3A0805126	GASKET-CYL FRONT COVER	.00	
ENGINE	ES1MNG93A	D3TE	6020	AA		0C3A0805031	GASKET-CYL FRONT COVER	.00	
TRPO	ES1MNG93A	D0VA	8K051	B		0KHA2201222	GSKT FRT GFT PIP	.00	
ENGINE	ES1MNG93A	C5GE	8507	A		0C3A0819020	GASKET-WATER PUMP	.00	
ENGINE	ES1MNG94A	C8SE	9903	A		0C3A0830010	GASKET-THERM CHOKE HEAT SPLY COVER	.00	
ENGINE	ES1MNG94A	D1AE	9923	AA		0C3A0830005	GASKET-THERM CHOKE HEAT SPLY CVR UPR	.00	
EED	ES1MNG96A	D9AF	12A676	AA		*09A0206012	B	.00	
EED	ES1MNG96A					*09A0206013	D	.00	
EED	ES1MNG96A					*09A0206010	D	.00	
EED	ES1MNG96A					*09A0206041	E	.00	
CLD	ES1MNG96A	D0AH	100872	AA		*W11405042	GSKT-ALC COMP CYLINDER BLK	.00	
TRPO	ES1MNG98A	D0TP	7086	A		0KHA0701050	GASKET-TRANS OUTPUT SHFT BRG RET	.00	
TRPO	ES1MNG98A					0KHA0701049	GASKET-TRANS OUTPUT SHFT BRG RET	.00	
ENGINE	ES1MNG103A	R1SF	8507	A2A		1C3A0919119	GASKET-WATER PUMP	9999.99	
CHASSIS	ES1MNG106A	D20A	28321	CA		0B2W04095185	INSUL-FRT WHL BRK	9999.99	

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PQ



Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS/JUTE YARN-E.P. LUBRICANT

E

ESE-M8G105-A

NO PART X REF.

1. SCOPE

The material defined by this specification is a braided oil packing constructed of woven asbestos yarns, organic fiber yarns, suitable reinforcements and a polyethylene, calcium complex lubricant.

2. APPLICATION

This specification was released originally for material used as a crankshaft oil seal for engines.

3. REQUIREMENTS

3.1 CONSTRUCTION

Shall be constructed of outer and inner braided jackets and core.

- Outer jacket shall consist of 24 ends of 1520 asbestos yarn.
- Inner jacket shall consist of 8 ends of 2 ply, 15 lb (7 kg) jute chain yarn.
- Core shall consist of 3 longitudinal members of 35 lb (16 kg) silk jute roving and double trace of red and green.

Yarns of both jackets shall be impregnated with extreme pressure (E.P.) calcium complex polyethylene petroleum lubricant.

Outer jacket shall have the surface finished with finely divided graphite only.

3.2 COMPOSITION, BY WEIGHT

3.2.1	Asbestos/Vegetable Yarn	36 - 42%
3.2.2	Jute	18 - 22%
3.2.3	Lubricants	38 - 42%
	Oxidation Stability, Pressure Drop, max (ASTM D 942, 500 h)	20 psi (138 kPa)
	Dropping Point, min (ASTM D 566)	177°C

Date	Para. No.	Revisions
1978 08 02		Metricated, Renumbered & Retyped <i>CESH-RD782440E Supp #5</i>
1964 05 05		Released E7-3098

**3.3 VEGETABLE FIBER CONTENT OF ASBESTOS YARN 20 - 27%**

Test Method: Remove the outer asbestos jacket from the assembly and extract the oil from the asbestos with CCl₄, then compute the loss in ignition of the asbestos component according to ASTM D 1061.

3.4 LOAD DEFLECTION

Thickness at 50 lb (222 N) Load, max	0.155 in (3.94 mm)
Thickness at 100 lb (445 N) Load, max	0.145 in (3.68 mm)

Test Method: Apply loads of 50 lb (222 N) and 100 lb (445 N) at least 1 in (25 mm) from end of specimen and 1 in (25 mm) minimum from indentations, using a 1.129 in (28.68 mm) presser foot, hold load for 1 min immediately record thickness.

3.5 STORAGE STABILITY

Must meet specification after normal storage for 6 months.

3.6 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

5. GENERAL INFORMATION

This information is for direction of the user and is not a requirement for the supplier.

5.1 ENDS

Reference to the number of ends (strands) of yarn used in braiding the tubular jacket.

5.2 YARN NO.
(ASTM D 375 and D 299)**5.3 CUT**
(ASTM D 375 and D 299)**5.4 ROVING WEIGHT**
(ASTM D 681)

" NO SOURCES INDICATED "



Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS/RUBBER

a E L u

ESE-M8G106-A

1. SCOPE

The material defined by this specification is an elastomeric bonded, compressed asbestos sheet, the asbestos being of spinning grade.

2. APPLICATION

This specification was released originally for material used where resistance to high temperature (approximately 649°C) and/or high swell in oil is required.

3. REQUIREMENTS

All tests shall be conducted in accordance with ASTM F 104, Type 1, unless otherwise specified.

3.1 COMPRESSIBILITY (ASTM F 36)

7 - 17%

Recovery, min

40%

3.2 TENSILE STRENGTH, min

Less than 1/64 in (0.40 mm) Thick
(Avg. of 3 tests)

2800 psi (19.3 MPa)

1/64 in (0.40 mm) and Greater

4500 psi (31.0 MPa)

3.3 IMMERSION IN LIQUIDS

Thickness change shall be measured with 9 + 0.1 oz (2.5 + 0.03 N) load on gage before immersion and 3 + 0.1 oz (0.83 + 0.03 N) load on gage after immersion using a presser foot diameter of 0.25 + 0.01 in (6.4 + 0.3 mm).

Immersion Fluid	Test Conditions	Thickness Change (Avg. of 3 Tests)	1/64 in (0.40 mm) And Greater
		Under 1/64 in (0.40 mm)	
ASTM Oil No. 1	5 h at 149 + 3°C	10-25%	10-20%
ASTM Oil No. 3	5 h at 149 + 3°C	80-110%	35-75%
ASTM Fuel "A"	5 h at 23 + 2°C	10-20%	10-20%
ASTM Fuel "B"	5 h at 23 + 2°C	25-55%	25-40%

3.3.1 Tensile Strength Loss, max
(ASTM Oil No. 1, 5 h at 149°C)

20%

Date	Para. No.	Revisions
1978 07 14		Metricated, Renumbered & Retyped CE3H-RD 782440
1964 09 01		Released E7-3141



3.4 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

R075

RAYBEST'S MANHATTAN

A-56

9001 1363

JUN 21, 1973

JUN 21, 1972	PCO	MATERIAL	PREFIX	BAGE	SUFFIX	CROSS REFERENCE - MATERIAL/PART NUMBER SEQ.	DESCRIPTION	WEIGHT	PAGE 1358
						FILE CONTROL NUMBER			COMMENT
CHASSIS	ESLWNG106A	D20A	28321	BA		18PW0405032	INSUL-FRT MIL RPK	9999.99	
CHASSIS	ESLWNG106A	D5AA	58266	AA		08DA0003020	GASKT ASY-RTN INLET PIPE	.03	
CHASSIS	ESLWNG106A					08TA0003170	GASKT ASY-RTN INLET PIPE	.03	
CHASSIS	ESLWNG106A	D50A	58266	AA		08AA0002029	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106A					08QA0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106A					08SA0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106A					08VA0002029	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106A					08ZA0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106A					18AA0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106A					18AC0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106A					18AD0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106A					18AE0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106A					18AF0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106A					18BA0002029	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106A					18CA0003072	GASKET ASY-RESONATOR	.03	
TRPO	ESLWNG106A	F0TA	58266	AA		08KA0004529	GSKT ASY-RTN INLT PIP	.00	
ENGINE	ESLWNG106A	F0BE	9C464	AA		0C3A0724301	GSKT-ENH CAL REGU VLV ADPT	9999.99	
ENGINE	ESLWNG106A	D42E	9C477	AB		0C310017120	GSKT CABG LCR	.00	
CHASSIS	ESLWNG106B	D5AA	58266	AA		08AA0003072	GASKT ASY-RTN INLET PIPE	.03	
CHASSIS	ESLWNG106B					08TA0003170	GSKT ASY-RTN INLET PIPE	.03	
CHASSIS	ESLWNG106B	D50A	58266	AA		08AA0002029	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106B					08QA0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106B					08SA0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106B					08VA0002029	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106B					08ZA0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106B					18AA0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106B					18AC0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106B					18AD0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106B					18AE0003072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESLWNG106B					18AF0003072	GASKET ASY-RESONATOR	.03	
TRPO	ESLWNG106B	F0TA	58266	AA		08KA0004529	GSKT ASY-RTN INLT PIP	.00	
ENGINE	ESLWNG106-B	D0TE	9447	DA		0C3A0816149	GSKT-CARB TO INTR MANIF	.00	
ENGINE	ESLWNG106-B	D0TE	9447	EA		0C3A0816003	GSKT-CARB TO INTAKE MANIFOLD SPACE	.00	
ENGINE	ESLWNG106B	E0SE	9447	AA		0C3A0816015	GSKT-CARB TO INTAKE MANIFOLD	.00	
ENGINE	ESLWNG106 B	E0AE	93476	AA		0C3A0712239	GSKT-ECR VALVE	.00	
ENGINE	ESLWNG109A	C8VE	8307	B		0C3A0919039	GASKET-WATER PUMP	.00	
CHASSIS	ESLWNG109B	C20A	30472	C		08DA0401614	CJ GASKET-FRT SUSP LWR ARM BALL JT	.00	
CHASSIS	ESLWNG109B	D12A	30472	AA		08TA0401610	DE GSKT-FRT SUSP LOWER ARM BALL JT	.00	
CHASSIS	ESLWNG109B					08TA0401610	DE GSKT-FRT SHD LOWER ARM BALL JT	.00	
ENGINE	ESLWNG109B	D42E	8255	AA		0C3A0902010	GASKET-WTR OUTLET CONN	.00	
ENGINE	ESLWNG109B	D10E	8507	AA		0C3A0919040	GASKET-WATER PUMP	.00	
ENGINE	ESLWNG109B	C8VE	8513	A		0C3A0902010	GASKET-WATER PUMP COVER	.00	
ETU	ESLWNG109B	D1AF	17C430	AA		*D9A1407004	M1A GASKET-W/WTR MTR SEAL	.00	
EED	ESLWNG109B					*D9A1407008	DM GASKET-W/WTR MTR SEAL	.00	
EED	ESLWNG109B					*D9A1407010	NM GASKET-W/WTR MTR SEAL	.00	
EED	ESLWNG109B					*D9L1407051	TF GASKET-W/WTR MTR SEAL	.00	
EED	ESLWNG109B					*D9L1407055	TF GASKET-W/WTR MTR SEAL	.00	
EED	ESLWNG109B					*D9L1407059	TF GASKET-W/WTR MTR SEAL	.00	
CHASSIS	ESLWNG111A	F1EC	3F519	AA		18BW1107770	GASKET-STND CR RACK SUPT-YK CVR	9999.99	
CHASSIS	ESLWNG111A	F1EC	3581	AA		18BW1107740	GASKET-STND CR MSG CVR	9999.99	
BEPE	ESLWNG123A	D12B	9076	AA		0ATA0101452	GSKT F/TX FILL TO OTR PNL	.01	
BEPE	ESLWNG123A	U3DB	9076	AA		0ADA2704044	GSKT FUEL TK FLR	.01	
BEPE	ESLWNG123A	D7EB	9076	AA		0ATA0101023	GSKT F/TX FILL TO OTR PNL	.01	
BEPE	ESLWNG123A	D71U	9076	AA		0ADA2702002	GSKT F/TX FILL	.02	
ENGINE	ESLWNG123A	D10E	91425	A1		0C3A0404015	SEAL-INT MANIF TO CYL BLK-FRT	.00	
ENGINE	ESLWNG124 A	D1CE	9C436	AA		0C3A0401510	GASKET-INTAKE MANIFOLD COVER	.00	
ENGINE	ESLWNG124-A	C0SE	2L437	BA		0C3A0413100		.00	

70

8001 1364

GASKET, ASBESTOS/RUBBER-HIGH TEMPERATURE

E_u

ESE-M8Q106-B

1. SCOPE

The material defined by this specification is a high grade gasket comprised of long asbestos fibers in combination with elastomeric binders.

2. APPLICATION

This specification was released originally for material used where high temperature resistance is paramount, such as a gasket for the EGR valve and carburetor spacer.

3. REQUIREMENTS

All tests shall be conducted in accordance with ASTM F 104, Type 1 material, unless otherwise specified. Test specimens are to be selected from finished gaskets when practicable.

3.1 ORIGINAL PROPERTIES (ALL THICKNESSES)

3.1.1	Tensile Strength, min	4000 psi (27.6 MPa)
3.1.2	Compressibility (ASTM F 36)	6 - 16%
	Recovery, min	35%

3.2 HEAT AGING
(22 h at $260 \pm 3^{\circ}\text{C}$, all thicknesses)

Weight Change, max	-7%
Tensile Strength Change, max	-30%
Compressibility	4 - 15%
Recovery, min	35%

Test Method: Place 3 weight change samples (1×2 in (25 x 50 mm) x sample thickness) and 3 tensile change ($1/2 \times 4$ in (13 x 100 mm) x sample thickness or any sample size which is practicable) between $4 \times 5 \times 1/2$ in (100 x 125 x 13 mm) steel plates. Place in furnace set at $260 \pm 3^{\circ}\text{C}$ for 22 h.

3.3 HEAT AGING
(22 h at $538 \pm 5^{\circ}\text{C}$, all thicknesses)

Weight Change, max	-25%
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Date	Para. No.	Revisions
1978 07 14		Metricated & Retyped CE3H-RD 78244D-E
1974 10 19		Released CE3D-DR 772793-E

**Compressibility****8 - 22%****Recovery, min****35%****Test Method: Same as in para 3.2, except set furnace at $538 \pm 5^{\circ}\text{C}$.****3.4 IMMERSION IN LIQUIDS****Apply only to thicknesses of 1/32 in (0.80 mm) through 1/16 in (1.6 mm).**

Immersion Fluid	Test Conditions	Thickness Increase	Tensile Strength Change, max
ASTM Oil No. 1	5 h at $149 \pm 3^{\circ}\text{C}$	5-22%	-40%
ASTM Oil No. 3	5 h at $149 \pm 3^{\circ}\text{C}$	25-75%	-65%
ASTM Fuel "A"	5 h at $23 \pm 2^{\circ}\text{C}$	8-20%	-55%
ASTM Fuel "B"	5 h at $23 \pm 2^{\circ}\text{C}$	18-45%	-65%

3.5 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

N 741 A	NICOLET IND., INC.	710
R 075	RAYBEST'S HANHATAN	A-56
N 723 A	NIPPON VALQUA IND.	1515



Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS/CHLOROPRENE RUBBER BINDER

E

ESE-M8G108-A

NO PART X REF.

1. SCOPE

The material defined by this specification is a compressed asbestos sheet with chloropren rubber binder.

2. APPLICATION

This specification was released originally for material used for cylinder head gaskets.

3. REQUIREMENTS

All tests shall be conducted in accordance with ASTM F 104, Type 1, unless otherwise specified.

3.1 COMPRESSIBILITY 7 - 17%
(ASTM F 36, 5000 psi (34.5 MPa) load)

Recovery, min 40%

3.2 TENSILE STRENGTH, min 1400 psi (9.7 MPa)

3.3 IGNITION LOSS, max 30%
(At 704°C)

3.4 RESILIENCE As specified on engineering drawing
(FLTM BV 11-1)

3.5 IMMERSION IN LIQUIDS

3.5.1 ASTM Oil No. 3, 5 h at 149 ± 3°C

Compressibility, max 30%
Recovery, min 30%
Tensile Strength Loss, max 50%
Thickness Change, max 25%
Weight Change, max 35%

3.5.2 ASTM Fuel "B", 5 h at 23 ± 2°C

Compressibility, max 35%
Recovery, min 35%
Tensile Strength Loss, max 70%
Thickness Change, max 25%
Weight Change, max 30%

Date	Para. No.	Revisions
1978 08 02		Metricated, Renumbered & Retyped CE3H-RD782440E Supp 5
1964 12 07		Released E7-3229 8001 1368

Eng Res 3948-s
June 77

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PRODUCED BY FORD

**3.6 IMMERSION IN LIQUIDS****Immersion Fluid****Test Conditions**

Water

70 h at boiling

ASTM Fuel "B"

70 h at $23 \pm 2^{\circ}\text{C}$

ASTM Oil No. 3

70 h at $23 \pm 2^{\circ}\text{C}$

ESE-M97B18-C Long Life Coolant and Water-50/50

70 h at boiling

After immersion in above fluids, as specified, the asbestos shall remain firm.

3.7 FLEXIBILITY FACTOR, "F"

Original

8

Oven Aged, 15 h at $100 \pm 3^{\circ}\text{C}$

12

3.8 COATING

The gasket shall be coated with a heat stable, noncarbonizing and nonoily parting film to meet the anti-stick and other requirements of the application.

The coating is applied to the gasket surface and shall not be removed as a continuous film.

**3.9 HEAT RESISTANCE
(FLTM BV 11-2)**

Must separate easily and remain in an intact condition when compressed 15% minimum.

3.10 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

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RAYBESTOS MANHATTAN

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Engineering Material Specification

Material Name

GASKET, ASBESTOS/STYRENE FIBER COMPOSITION

Specification Number

ESW-M8G109-B

a e f n P

1. SCOPE

The material defined by this specification is an asbestos/styrene fiber gasket, which has been coated on both sides with a graphite compound and post cured to increase abrasion resistance and improve bolt torque retention.

2. APPLICATION

This specification was released originally for material used as a gasket for the rear axle housing cover.

3. REQUIREMENTS

Conditioning prior to testing shall be in conformance with ASTM F 104, Type 1, unless otherwise specified.

3.1 TENSILE STRENGTH, min 1250 psi (8.6 MPa)
(ASTM F 39, Tested perpendicular to the grain)

3.2 COMPRESSIBILITY, min 18%
(ASTM F 36, Procedure "A")

Recovery, min 40%

3.3 IMMERSION IN LIQUIDS Weight Increase, max
(ASTM D 471, 22 h at $23 \pm 2^\circ\text{C}$)

ASTM Oil No. 1 45%

ASTM Oil No. 3 70%

ASTM Fuel "A" 35%

ASTM Fuel "B" 55%

Water 50%

3.4 COMPRESSION SET, max 15%
(ASTM D 395, Method "A", 22 h at $70 \pm 1^\circ\text{C}$)

3.5 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

Date	Para. No.	Revisions
1976 10 04		Metricated, Renumbered & Retyped CWIOR-RD-824162 <i>John J. Mame</i>
1965 01 11		Released Per PCR 406856

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Eng Res
June 77 3948-B

R001 1370

FE0

8601 1371

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Engineering Material Specification

Material Name

GASKET, ASBESTOS/RUBBER

Specification Number

N

ESEN-MBG121-A

NO PART X REF.

1. SCOPE

The material defined by this specification is a compressed asbestos fiber, compounded with natural and synthetic rubber.

2. APPLICATION

This specification was released originally for material used as a gasket for the tractor transmission handbrake cover.

3. REQUIREMENTS

Conditioning prior to testing and testing shall be in conformance to ASTM F 104, Type 1, unless otherwise specified.

3.1 TENSILE STRENGTH, min (ASTM F 39, tested perpendicular to grain)

0.010 in (0.25 mm) to 0.016 in (0.41 mm) thick inclusive	1200 psi (8.3 MPa)
0.017 in (0.43 mm) to 0.030 in (0.76 mm) thick inclusive	1600 psi (11.0 MPa)
0.031 in (0.79 mm) and over	2000 psi (13.8 MPa)

3.2 COMPRESSIBILITY (ASTM F 36, Procedure "A")

0.010 in (0.25 mm) to 0.016 in (0.41 mm) thick inclusive	5 - 15%
0.017 in (0.43 mm) and over	6 - 14%

3.2.1 Recovery, min

0.010 in (0.25 mm) to 0.016 in (0.41 mm) thick inclusive	30%
0.017 in (0.43 mm) and over	35%

3.3 IMMERSION IN LIQUIDS (ASTM D 471)

3.3.1 Tensile Strength, psi (MPa), min

Thickness	ASTM Oil No. 1 (5 h at 150 °C)	ASTM Fuel "B" (24 h at 23 ± 2 °C)
0.010/0.016 in (0.25/0.41 mm)	400 (2.8)	400 (2.8)
0.017/0.030 in (0.43/0.76 mm)	600 (4.1)	600 (4.1)
0.031 in (0.79 mm) and over	800 (5.5)	800 (5.5)

Date	Para. No.	Revisions
1978 11 21		Metricated, Renumbered & Retyped CNT-L-770250-C
1967 04 06		Released KT-10805

8001 1372

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Engineering Material Specification

ESM-M5G121-A

3.3.2 Thickness Change, % max

Original Thickness	ASTM No. 1 Oil (5 h at 150°C)	ASTM No. 3 Oil (5 h at 150°C)	ASTM Fuel "A" (24 h at 23 + 2°C)
0.010/0.016 in (0.25/0.41 mm) inclusive	40	70	0 to +35
0.017/0.030 in (0.43/0.76 mm) inclusive	35	65	0 to +30
0.031/0.061 in (0.79/1.55 mm) inclusive	30	60	0 to +25
0.062 in (1.57 mm) and over	25	55	0 to +20

3.4 DENSITY

0.010 in (0.25 mm) thick and over 1.65 - 2.0 g/cm³

3.5 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

C 755 A

COOPERS MECHANICAL, LTD.

CAF-257

1978 11 21

Eng Res 3948-b
June 77

8001 1373

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Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS/RUBBER-LOW COMPRESSIBILITY

A

ESA-M8G122-A

NO PART X REF.

1. SCOPE

The material defined by this specification is a compressed sheet gasket, composed of asbestos fiber combined with an oil resistant elastomeric binder.

2. APPLICATION

This specification was released originally for material used where a low compressibility gasket, compatible with hydraulic brake fluid, is required.

3. REQUIREMENTS

All tests shall be conducted in accordance with ASTM F 104, Type 1, unless otherwise specified.

3.1 ORIGINAL PROPERTIES

3.1.1 Compressibility (ASTM F 36, Procedure "A")

At 5000 psi (34.5 MPa) load

7 - 17%

At 1000 psi (6.9 MPa) load

4 - 9%

Recovery, min

40%

3.1.2 Tensile Strength, min

2300 psi (15.9 MPa)

3.1.3 Flexibility (Diameter of rod equals 12 times the material thickness)

No cracks

3.2 AGED PROPERTIES

3.2.1 Immersion in ASTM Oil No. 1 (ASTM D 471, 5 h at 149 ± 3°C)

Compressibility, max

35%

Tensile Strength Change, max

30%

Thickness Change, max

15%

Flexibility
(Diameter of rod equals 12 times the material thickness)

No cracks

Date	Para. No.	Revisions	Approval
1979 01 10		Metricated & Retyped C.A.H.2 823385	J. W. Long 11/17/78
1967 04 20		Released AV2-308	E.P. Francis 11-25-78

1978 11 30
End Res 3948-a
June 77

8001 1374

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**3.2.2 Immersion in ASTM Oil No. 3
(ASTM D 471, 5 h at $149 \pm 3^{\circ}\text{C}$)**

Compressibility, max	30%
Tensile Strength Loss, max	50%
Thickness Change	0 to +30%

**3.2.3 Immersion in ASTM Fuel "B"
(ASTM D 471, 5 h at $23 \pm 2^{\circ}\text{C}$)**

Weight Change	0 to +30%
Thickness Change	0 to +25%

**3.2.4 Immersion in ESA-M6C25-A Brake Fluid
(ASTM D 471, 5 h at $23 \pm 2^{\circ}\text{C}$)**

Weight Change	0 to +15%
Thickness Change, max	5%

3.3 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

J 612 A

J-M SALES CORP.
832 FISHER BLDG.
DETROIT, MICH. 48202

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11-22-78
JWC
Eng Res
June 77 3948-b

1978 11 30

9001 1375

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Engineering Material Specification

Material Name

Specification Number

GASKET, STEEL CORE-ASBESTOS/RUBBER BINDER

E

ESE-M8G124-A

1. SCOPE

The material defined by this specification consists of a perforated low carbon steel core covered on each side with a material consisting of asbestos and synthetic rubber binder.

2. APPLICATION

This specification was released originally for material used on engines as an intake manifold gasket, where high compressive strength is required.

3. REQUIREMENTS

3.1 CONSTRUCTION

The gasket consists of a perforated low carbon steel core with a material consisting of asbestos and synthetic rubber binder mechanically bonded to each side of the core.

3.1.1 Steel Core

Low carbon steel. Thickness and perforations as specified on engineering drawings.

3.1.2 Fabrication

The synthetic rubber impregnated asbestos sheet shall be plied uniformly and mechanically bonded to each side of the core to meet requirements of the application. Thickness shall be specified on engineering drawing.

3.2 FINISHED GASKET

All tests shall be conducted in accordance with ASTM F 104, Type 1 materials, unless otherwise specified.

3.2.1 Resilience (FLTM BV 11-1)

As specified on engineering drawing.

3.2.2 Immersion in Liquids (16 h at boiling)

Immersion Fluid

- Water
- Ford Permanent Anti-Freeze/Water - 50/50

After immersion in above fluids, the asbestos shall be firm and must not separate from the steel core.

Date	Para. No.	Revisions
1976 07 17		Metricated, Renumbered & Retyped CISH-RD78244DE SUPP #2
1966 01 08		Released E3W-123

**3.2.3 Weight**

Thickness, in (mm)	lb/ft ² (kg/m ²)
0.030-0.035 (0.76-0.89)	0.47-0.57 (0.14-0.17)
0.042-0.047 (1.07-1.19)	0.56-0.66 (0.17-0.20)
0.055-0.060 (1.40-1.52)	0.62-0.72 (0.19-0.22)
0.065-0.070 (1.65-1.78)	0.72-0.82 (0.22-0.25)

3.2.4 Properties

	Compressibility at 5000 psi (34.5 MPa)	Recovery, min	Thickness Change, max	Weight Change, max
Original	20-30%	30%	-	-
Immersion in ASTM Oil #1 (5 h at 149 ± 3°)	15-30%	35%	15%	20%
Immersion in ASTM Oil #3 (5 h at 149 ± 3°C)	25-40%	35%	25%	25%
Heat Aged (22 h at 204 ± 3°C)	10-20%	40%	-6 to 0%	-2 to 0%

3.3 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

M 141 A

McCord Corp.

McCord PAC II

V 782 C

VICTOR

VICTOCOR 150 n 160

110

SUFFIX FILE CONTROL NUMBER

PAGE 133
COMMENT

ITEM	MATERIAL	PREFIX	BASE	SUFFIX	FILE CONTROL NUMBER	DESCRIPTION	WEIGHT	PAGE 1356	COMMENT
CHASSIS	ESLWNG10GA	020A	28321	BA	18N0A000002	INTAKE-FRT PNL RPK	9999.99		
CHASSIS	ESLWNG10GA	050AA	58266	AA	08DA0000020	GASKT ASY-GRN INLET PIPE	.03		
CHASSIS	ESLWNG10GA				08TA00000170	GASKT ASY-GRN INLET PIPE	.03		
CHASSIS	ESLWNG10GA	050A	58266	AA	08AA00000202	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GA				08QA000003072	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GA				08SA000003072	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GA				08VA00000202	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GA				08ZA000003072	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GA				18A000000202	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GA				18LA000003072	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GA				18MA000003072	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GA				18SA000003072	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GA				18VA00000202	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GA				18ZA000003072	GASKET ASY-RESONATOR	.03		
TRPO	ESLWNG10GA	F0TA	58266	AA	08GA00000520	GASKT ASY-GRN INLT PIP	.00		
ENGINE	ESLWNG10GA	F0CE	9C464	AA	0C3A00720001	GASKT-EXH FAN REGU VLV ADPT	9999.99		
ENGINE	ESLWNG10GA	D42E	9C477	AB	0C3A00117120	GASKT CARB INCR	.00		
CHASSIS	ESLWNG10GB	F5AA	58266	AA	08GA00000520	GASKT ASY-GRN INLET PIPE	.03		
CHASSIS	ESLWNG10GB				08IA000003170	GASKT ASY-GRN INLET PIPE	.03		
CHASSIS	ESLWNG10GB	050A	58266	AA	08AA00000202	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GB				08QA000003072	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GB				08SA000003072	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GB				08VA00000202	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GB				08ZA000003072	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GB				18AA00000202	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GB				18CA000003072	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GB				18GA000003072	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GB				18SA000003072	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GB				18VA00000202	GASKET ASY-RESONATOR	.03		
CHASSIS	ESLWNG10GB				18ZA000003072	GASKET ASY-RESONATOR	.03		
TRPO	ESLWNG10GB	F0TA	58266	AA	08GA00000520	GASKT ASY-GRN INLT PIP	.00		
ENGINE	ESLWNG10GB	D0TE	9447	DA	0C3A0016140	GASKT-CARB IN INTK MANIF	.00		
ENGINE	ESLWNG10GB	D0TE	9447	EA	0C3A0016000	GASKT-CARB TO INTAKE MANIFOLD SPACE	.00		
ENGINE	ESLWNG10GB	E06E	9447	AA	0C3A0016015	GASKT-CARB TO INTAKE MANIFOLD	.00		
ENGINE	ESLWNG10GB	E0AE	9C176	AA	0C3A0011230	GASKT-IGP VALVE	.00		
ENGINE	ESLWNG10GA	C0VE	8507	B	0C3A0010035	GASKET-WATER PUMP	.00		
CHASSIS	ESLWNG10GB	C20A	31472	C	08DA00101614	GASKET-FRT SUSP LWR ARM BALL JT	.00		
CHASSIS	ESLWNG10GB	D12A	31472	AA	08TA00001610	GASKT-FRT SUSP LOWER ARM BALL JT	.00		
CHASSIS	ESLWNG10GB				08TA00001610	GASKT-FRT SUSP LOWER ARM BALL JT	.00		
ENGINE	ESLWNG10GB	D42E	8255	AA	0C3A00000010	GASKET-WTR OUTLET CONN	.00		
ENGINE	ESLWNG10GB	D1JE	8507	AA	0C3A0010030	GASKET-WATER PUMP	.00		
ENGINE	ESLWNG10GB	C0VE	8513	A	0C3A00000040	GASKET-WATER PUMP COVER	.00		
ED	ESLWNG10GB	D1AF	17C430	AA	*09A1107001	GASKET-W-WTR MTR SEAL	.00		
ED	ESLWNG10GB				*09A1407008	GASKET-W-WTR MTR SEAL	.00		
ED	ESLWNG10GB				*09A1407010	GASKET-W-WTR MTR SEAL	.00		
ED	ESLWNG10GB				*09L1407051	GASKET-W-WTR MTR SEAL	.00	</	

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JUN 21, 1979

REQ	MATERIAL	PREFIX	BASE	SUFFIX	CROSS REFERENCE - MATERIAL/PART NUMBER SEQ.	DESCRIPTION	WEIGHT	PAGE 1357 COMMENT
ENGINE	ESI-MBG124A	E0SE	9L438	AB	0C3A0113122	GASKET-INT MANIF INTNL COOLER	.00	
ENGINE	ESI-MBG124A	E0SE	9L438	BD	0C3A0113101	GASKET-INT MAN INTNL COOLER	.00	
ENGINE	ESI-MBG124A	E0SE	9L438	CA	0C3A0113110	GASKET-INT MANIF INTER COOLER	.00	
FFD	ESI-MBG126A	C8AF	14A427	B	0DAA1407004 DB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DAA1407004 DB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DAA1407707 DB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DAA1407109 DB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DAA1407101 DB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DOR1407001 GB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DOR1407001 HB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DOR1407003 GR	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DOR1407003 HR	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DOR1407007 GR	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DOR1407007 HB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DOR1407001 GB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DOR1407004 HB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DAA1407012 DB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DAA1407014 DB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DVA1407004 DB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DVA1407004 DB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DCA1407101 GB	GASKET-WND REG YOKE	.00	
FFD	ESI-MBG126A				0DCA1407101 GB	GASKET-WND REG YOKE	.00	
ENGINE	ESI-MBG127A	D5AE	6584	AA	0C3A0113011	GASKET-VALV P/A COVER	.00	
ENGINE	ESI-MBG127A	D7VE	6584	AA	0C3A0113070	GASKET-VALV ROCKER ARM COVER	.00	
ENGINE	ESI-MBG127 A	D1SM	6710	A4B	1C3A0113021	GASKET-OIL PAN RH	9999.99	
ENGINE	ESI-MBG127 A	D1SM	6710	A5B	1C3A0113049	GASKET-OIL PAN RH	9999.99	
ENGINE	ESI-MBG127A	D1SM	6711	A4B	1C3A0113070	GASKET-OIL PAN LH	9999.99	
ENGINE	ESI-MBG127 A	D1SM	6711	A5B	1C3A0113049	GASKET-OIL PAN LH	9999.99	
ENGINE	ESI-MBG127A	D3UE	6753	AA	0C3A0113015	GASKET-OIL LEVEL IND BOSS	.00	
ENGINE	ESI-MBG127A3	D1SM	6710	A12B	1C3A0113057	GASKET-OIL PAN RH	9999.99	
ENGINE	ESI-MBG129A	D0AE	6710	B	0C3A0113080	GASKET-OIL PAN RH	.00	
ENGINE	ESI-MBG129A	D42E	6710	AA	0C3A0113010	GASKET-OIL PAN-RH	.00	
ENGINE	ESI-MBG129 A	D9ZE	6710	AA	0C3A0113001	GASKET-OIL PAN R.H.	.00	
ENGINE	ESI-MBG129A	D0AE	6711	B	0C3A0113085	GASKET-OIL PAN L.H.	.00	
ENGINE	ESI-MBG129A	D42E	6711	AA	0C3A0113015	GASKET-OIL PAN-LH	.00	
ENGINE	ESI-MBG129 A	D9ZE	6711	AA	0C3A0113002	GASKET-OIL PAN L.H.	.00	
ENGINE	ESLMBG136A	ESE	MB1136	A	0C3A0113040	GASKET-ASY-TOS & NUCOPRENE	9999.99	
CHASSIS	ESAMBG140A	D52A	58609	AA	0D1AC002437	1/2"IL-PRK PRK CONTR HEAT	.01	
CHASSIS	ESAMBG140A				0D2AC002437	1/2"IL-PRK PRK CONTR HEAT	.01	
CHASSIS	ESAMBG140A				1D2AC002437	1/2"IL-PRK PRK CONTR HEAT	.01	
CHASSIS	ESAMBG140A	U5AA	58266	AA	0D0A0103020	GASKET-ASY-ROCK INLET PIPE	.03	
CHASSIS	ESAMBG140A				0D1A0103170	GASKET-ASY-ROCK INLET PIPE	.03	
CHASSIS	ESAMBG140A	D50A	58266	AA	0DAA0103020	GASKET-ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				0D2A0103072	GASKET-ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				0D5A0103072	GASKET-ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				0DVA0103072	GASKET-ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				0DZA0103072	GASKET-ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				1BAA0103072	GASKET-ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				1BDAC003072	GASKET-ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				1BCAC003072	GASKET-ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				1DSAC003072	GASKET-ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				1BVA0103020	GASKET-ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				1BZA0103072	GASKET-ASY-RESONATOR	.03	
TRPO	ESAMBG140A	TOTA	58266	AA	0KGA0103452	GASKET-ASY-ROCK INLT PIP	.00	
ENGINE	ESC-MBG142-A	D7TE	6584	AA	0C3A0113039	GASKET-VALV P/A COVER	.00	
ENGINE	ESI-MBG142A	D1SM	6584	D5A	1C3A0109081	GASKET-VALV ROCKER ARM CVR	9999.99	
ENGINE	ESI-MBG142 A	D1SM	6584	D6A	1C3A0109029	GASKET-VALV ROCKER ARM CVR	9999.99	

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PQ



Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS/NITRILE RUBBER

F

ESP-M8G126-A

1. SCOPE

The material defined by this specification is a composition of beater saturated asbestos fiber and nitrile rubber.

2. APPLICATION

This specification was released originally for material used as a heavy duty gasket in the window regulator motor.

3. REQUIREMENTS

All tests shall be conducted in accordance with ASTM F 104, unless otherwise specified.

3.1 DENSITY, min 90 lb/ft³ (1442 kg/m³)

3.2 TENSILE STRENGTH, min 2000 psi (13.8 MPa)

3.3 COMPRESSIBILITY
(ASTM F 36, at 5000 psi (34.5 MPa) load) 5 - 17%

Recovery, min 45%

3.4 IMMERSION IN ASTM NO. 3 OIL
(5 h at 149 ± 3°C)

Tensile Strength Loss, max 35%

Compressibility, max 20%

Thickness Increase, max 20%

3.5 IMMERSION IN ASTM FUEL "B"
(5 h at 23 ± 2°C)

Weight Increase, max 25%

Thickness Increase, max 25%

3.6 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

Date	Para. No.	Revisions
1978 11 07		Metricated, Renumbered & Retyped CF4H-RD 567168-41
1967 09 27		Released (Was XF-M8GX3) F6-3223



4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

5. GENERAL INFORMATION

The material data included herein is for information only and is not a requirement for the supplier.

5.1 TORQUE RETENTION

This material will retain up to 80% of the initial torque after 22 h at 100°C under 3000 psi (20.7 MPa) flange pressure.

5.2 Asbestos Content

60 - 65%

A 689 B

ARMSTRONG

AN 801Z

F 149 A

F. D. FARNUM CO.

KAOBESTOS 67367

2671 PARK RIDGE

A², MICH. 48103

FEQ

JUN 21, 1979	MATERIAL				CROSS REFERENCE - MATERIAL/PART NUMBER	DESCRIPTION	WEIGHT	PAGE 1357
PEO	PREFIX	BASE	SUFFIX	FILE CONTIN	NUMBER			COMMENT
ENGINE	ESF-MRG124A	E0SE	9L438	AB	OC3A0413122	GASKET-INT VAN INTNL COOLER	.00	
ENGINE	ESF-MRG124A	E0SE	9L438	BD	OC3A0413101	GASKET-INT VAN INTNL COOLER	.00	
ENGINE	ESF-MRG124A	E0SE	9L438	CA	OC3A0413110	GSKT-INT VANIF INTER COOLER	.00	
FED	ESF-MRG126A	CBAF	14A427	B	ODAA1407005	DB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODAA1407005	DB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODAA1407002	DR	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODLA1407109	DB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODDA1407101	DB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODOR1407001	GB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODGR1407001	HB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODQR1407001	LB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODCR1407003	HB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODMR1407002	GB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODUR1407002	HB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODOR1407003	GB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODUR1407004	HB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODSA1407012	DB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODSA1407014	DB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODVA1407004	DB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODVA1407005	DB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODGA1407101	GB	GASKET-WND REG YOKE	.00
FED	ESF-MRG126A				ODGA1407101	JB	GASKET-WND REG YOKE	.00
ENGINE	ESF-MRG127A	D5AE	6584	AA	OC3A0513011	GSKT-VLV P/A COVER	.00	
ENGINE	ESF-MRG127A	D7VC	6584	AA	OC3A0513070	GASKET-SALVE ROCKER ARM COVER	.00	
ENGINE	ESF-MRG127 A	RISM	6710	A4B	IC3A0513021	GASKET-OIL PAN RH	9999.99	
ENGINE	ESF-MRG127 A	RISM	6710	A5B	IC3A0513049	GSKT-OIL PAN RH	9999.99	
ENGINE	ESF-MRG127A	RISM	6711	A4B	IC3A0513020	GASKET OIL PAN LH	9999.99	
ENGINE	ESF-MRG127 A	RISM	6711	A5B	IC3A0513048	GSKT-OIL PAN LH	9999.99	
ENGINE	ESF-MRG127A	D5UE	6753	AA	OC3A0513015	GASKET-OIL LEVEL IND BOSS	.00	
ENGINE	ESF-MRG127A3	RISM	6710	A12B	IC3A0513057	GASKET-OIL PAN RH	9999.99	
ENGINE	ESF-MRG129A	D0AE	6710	B	OC3A0513080	GASKET-OIL PAN RH	.00	
ENGINE	ESF-MRG129A	D4ZE	6710	AA	OC3A0513010	GASKET-OIL PAN-RH	.00	
ENGINE	ESF-MRG129 A	D9ZE	6710	AA	OC3A0513001	GSKT-OIL PAN R.H.	.00	
ENGINE	ESF-MRG129A	D0AE	6711	B	OC3A0513085	GASKET-OIL PAN L H	.00	
ENGINE	ESF-MRG129A	D4ZE	6711	AA	OC3A0513015	GASKET-OIL PAN-LH	.00	
ENGINE	ESF-MRG129 A	D9ZE	6711	AA	OC3A0513002	GSKT-OIL PAN L.H.	.00	
ENGINE	ESF-MRG130A	ESE	M5G136	A	OC3A0513040	GASKET-ASBESTOS & NITOPRENE	9999.99	
CHASSIS	ESAMRG140A	D52A	B609	AA	OBAC0502137	INHL-FRANK CONFR HEAT	.01	
CHASSIS	ESAMRG140A				OBAC0502137	INHL-FRANK CONFR HEAT	.01	
CHASSIS	ESAMRG140A				IBAC0502137	INHL-FRANK CONFR HEAT	.01	
CHASSIS	ESAMRG140A	D5A1	50266	AA	OHDAG03020	GSKT ASY-RICH INLET PIPE	.03	
CHASSIS	ESAMRG140A				OHTAD030170	GSKT ASY-RICH INLET PIPE	.03	
CHASSIS	ESAMRG140A	D50A	50266	AA	OUAAD03020	GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMRG140A				OUQAN03072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMRG140A				OBGAC03072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMRG140A				OBVAD03020	GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMRG140A				OUZAD03072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMRG140A				IBAAD03020	GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMRG140A				IBUAD03072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMRG140A				IBQAC03072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMRG140A				IBSAC03072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMRG140A				IBVAD03020	GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMRG140A				IBZAD03072	GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMRG140A	D5A1	50266	AA	OKGA0501527	GSKT ASY-RICH INLT PIP	.00	
ENGINE	ESF-MRG142-A	D7TE	6584	AA	OC3A0513039	GSKT-VALVE P/A COVER	.00	
ENGINE	ESF-MRG142A	RISM	6584	DA	IC3A0509081	GASKET-VLV ROCKER ARM CVR	9999.99	
ENGINE	ESF-MRG142 A	RISM	6584	DGA	IC3A0509029	GSKT-VLV ROCKER ARM CVR	9999.99	

Engineering Material Specification

Material Name

GASKET, ASBESTOS/STEEL/ASBESTOS

Specification Number

N ESEN-M8G133-A

NO PART X REF.

1. SCOPE

The material defined by this specification consists of laminations of asbestos, steel and asbestos, respectively.

2. APPLICATION

This specification was released originally for material used in high load and oil resistant applications, e.g., tractor power steering box to gearbox gasket.

3. REQUIREMENTS

3.1 CONSTRUCTION

Steel sheet with asbestos on both sides.

The steel sheet is formed in such a manner that it forms a key for the asbestos and increases available compressibility of the gasket material, e.g., dimpled.

3.1.2 Asbestos

Material

Must be of a good grade of millboard, properly treated and impregnated to render it suitable for use when in contact with water, oil, or gasoline.

Fabrication

Shall be plied and adhered uniformly on both sides of the steel sheet.

3.2 FINISHED PIECE

3.2.1 Compressibility, as received

5 - 15%

Recovery, min

30%

Test Method: ASTM F 36, except no conditioning, penetrator 0.8 in (20 mm), preload 1 lb (4.4 N), total compressive stress 1000 psi (6.9 MPa).

3.2.2 Surface

Shall be smooth, with no dimples protruding or noticeable to the touch. It must be flexible enough to permit rapid assembly.

Date	Para. No.	Revisions	
1973 11 21		Metricated & Retyped CNT-E-770250-C	C. A. H. Kennedy 6 30 72
1970 06 26		Released CKT-955858-A	

8001 1383

Page 1 of 2



3.2.3 Immersion in Liquids, Weight Increase, max

Test Method: Soak 2 x 2 in (50 x 50 mm) gasket sections for 24 h at $23 \pm 2^\circ\text{C}$ in the following fluids. Remove, blot off and reweigh. Calculate % weight increase to following requirements.

• ASTM Reference Fuel "A"	15%
• ASTM Oil No. 1	15%
• Water	20%

3.2.4 Immersion in Liquids, Thickness Increase, max

Test Method: Soak 2 x 1 in (50 x 25 mm) gasket sections in the following fluids at the prescribed temperatures for 5 h. Remove, blot off and recheck thickness and calculate % thickness increase to following requirement.

• ASTM Reference Fuel "A" at $23 \pm 2^\circ\text{C}$	10%
• ASTM Reference Fuel "B" at $23 \pm 2^\circ\text{C}$	20%
• ASTM Oil No. 1 at 149°C	15%
• ASTM Oil No. 3 at 149°C	20%

Blistering is permissible after tests in ASTM Oil Nos. 1 and 3 but specification figures must be met.

3.2.5 Stability

The condition of the material after receiving the above tests must be good. It shall not disintegrate or degrade such as would render it unfit for use, even though the amount of absorbed liquids was within the limits specified.

3.3 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ESM specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

C 755 A

COOPERS MECHANICAL LTD.



Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS FIBER/ELASTOMERS-BEATER ADDITION

P_u ESW-M8G135-A

NO PART X REF.

1. SCOPE

The material defined by this specification is a gasket material compounded from asbestos fibers and elastomeric polymers. It is produced by the beater addition process.

2. APPLICATION

This specification was released originally for material used as rear axle cover plate gaskets.

3. REQUIREMENTS

(For 1/32 (0.79 mm) thick material)

All tests and conditioning shall be conducted in accordance with ASTM F 104, Type 1, unless otherwise specified.

3.1 COMPRESSIBILITY (ASTM F 36, Procedure "A")

15 - 25%

Recovery, min

40%

3.2 TENSILE STRENGTH, min

1500 psi (10.3 MPa)

3.3 IMMERSION IN LIQUIDS

Thickness change shall be measured with 9 + 0.1 oz (2.5 + 0.03N) load on gage before immersion, and 3 + 0.1 oz (0.83 + 0.03 N) after immersion, using a presser foot diameter of 0.25 ± 0.01 in (6.4 ± 0.3 mm).

Immersion Fluid

Test Conditions

Thickness Change

ASTM Oil No. 1

5 h at 149 ± 3°C

20 - 35%

ASTM Oil No. 3

5 h at 149 ± 3°C

35 - 60%

ASTM Fuel "A"

5 h at 23 ± 2°C

15 - 30%

ASTM Fuel "B"

5 h at 23 ± 2°C

25 - 40%

3.4 COMPRESSION SET, max (ASTM D 395, Method "B", 22 h at 70 ± 1°C, plied to 0.5 in (13 mm))

60%

3.5 FINISHED PRODUCT

Physical and/or performance requirements of finished product, when required, shall be as specified on the affected part or product engineering drawing, or in the affected part or product engineering performance specification.

Date	Para. No.	Revisions
1978 10 04		Netricated, Renumbered & Retyped CWIOH-RD-824168 <i>John L. Mauer</i>
1973 02 15		Released PCR 970023



3.6 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

F 264 A

FEDERAL-MOGUL CORP.

VELBESTOS 840



Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS FIBER/NEOPRENE RUBBER BINDER

E

ESE-M8G136-A

1. SCOPE

The material defined by this specification is a gasket composed of asbestos fibers with neoprene rubber binder.

2. APPLICATION

This specification was released originally for material used as a gasket between an engine front cover and engine block.

3. REQUIREMENTS

The finished parts shall meet the requirements of this specification. These requirements are for nominal thickness of 0.015-0.030 in (0.38-0.76 mm).

All tests shall be conducted in accordance with ASTM F 104, Type 1 materials, unless otherwise specified. Test specimens are to be selected from the finished gaskets when practicable.

3.1	DENSITY, min (Type 2 material)	75 lb/ft ³ (1201 kg/m ³)
3.2	COMPRESSIBILITY (ASTM F 36, 5000 psi (34.5 MPa) load)	15 - 30%
	Recovery, min	40%
3.3	TENSILE STRENGTH, min	1600 psi (11.0 MPa)
3.4	FLEXIBILITY (Type 2 material)	
3.4.1	Original	Pass 12 x thickness
3.4.2	Heat Aged (22 h at 149 ± 3°C)	Pass 16 x thickness
3.4.3	Immersion in ASTM Oil No. 1 (5 h at 149 ± 3°C)	Pass 16 x thickness
3.4.4	Immersion in 50-50 ESE-M97B18-C and Water (70 h at boiling)	Pass 16 x thickness

Date	Para. No.	Revisions
1978 07 12		Metricated. Renumbered & Retyped CESH-RD782440E SUPP #2
1972 07 12		Released E3C-874030

8001 1387

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**3.5 HEAT AGING**
(ASTM D 573, 22 h at $149 \pm 1^\circ\text{C}$)

Compressibility
(5000 psi (34.5 MPa) load) 10- 25%

Tensile Strength Change, max 60%

3.6 IMMERSION IN LIQUIDS

	5000 psi (34.5 MPa) Compressibility	Tensile Strength Change, max	Weight Change, max	Thickness Change, max
ASTM Oil No. 1 (5 h at $149 \pm 3^\circ\text{C}$)	20-40%	25%	35%	10%
ASTM Oil No. 3 (5 h at $149 \pm 3^\circ\text{C}$)	15-40%	40%	45%	25%
ASTM Fuel "B" (70 h at $23 \pm 2^\circ\text{C}$)	20-35%	50%	35%	15%
50/50 - ESE-M97B18-C and Water (70 h at boiling)	20-35%	75%	55%	20%

3.7 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

L 180 A

LATEX FIBER INDUSTRIES

CA-412

PEO

SUFFIX FILE CONTROL NUMBER

COMMENT

[illegible]

AB001 1389 PQ



Engineering Material Specification

Material Name

Specification Number

GASKET, STEEL CORE-FIBERBOARD-ASBESTOS/RUBBER

E

ESE-M8G137-A

NO PART X REF

1. SCOPE

The material defined by this specification is a steel core mechanically bonded to a resin impregnated fiberboard. This subassembly is then faced with an asbestos, synthetic rubber gasket material which is resistant to fuel, oil and water.

2. APPLICATION

This specification was released originally for material used where heat insulation and spacer requirements are involved and where high bolt torque retention is a critical factor such as, a gasket between carburetor and intake manifold.

3. REQUIREMENTS

3.1 CONSTRUCTION

The gasket consists of a perforated low carbon steel core with materials consisting of impregnated fiberboard mechanically bonded to each side of the core and a gasket of synthetic rubber binder and asbestos bonded to the outer sides of the board.

3.1.1 Steel Core

Low Carbon Steel ESE-M1A140-A

Thickness and perforations as specified on engineering drawings.

3.1.2 Fiberboard

Phenolic Resin Sheet ESB-M2E91-A

Thickness as specified on engineering drawing.

3.1.3 Fabrication

The fiberboard shall be plied uniformly and bonded on each side of the steel core and the synthetic rubber binder and asbestos shall be plied uniformly and bonded on the outer sides of the fiberboard to meet the requirements of the application and as specified according to individual blueprints.

3.2 FINISHED GASKET

Use the actual finished insulator or parts thereof for physical test specimens. Specimen size need not conform to reference ASTM test methods.

3.2.1 Density, min (ASTM F 104)

67 lb/ft³ (1073 kg/m³)

Date	Para. No.	Revisions
1978 08 02		Metricated & Retyped ESEH-RD782440E-SUPP#5
1972 12 09		Released E3C-93



3.2.2	Compressibility (ASTM F 36, 5000 psi (34.5 MPa) load)	5 - 8%	
	Recovery, min	65%	
3.2.3	Tensile Strength, min (ASTM F 39)	3500 psi (24.1 MPa)	
3.2.4	Immersion in Liquids (ASTM F 104, 22 h at 21 to 29°C)		
	Immersion Fluid	Weight Increase, max	Thickness Increase, max
	ASTM Fuel "B"	25%	5%
	ASTM Oil No. 3	25%	5%
	Water	40%	60%

3.3 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

D 276 A

DETROIT GASKET

D6-1069



Engineering Material Specification

Material Name

Specification Number

GASKET, STEEL CORE-ASBESTOS/WIRE-HIGH TEMPERATURE
GASKET, STEEL CORE-ASBESTOS/WIRE-HIGH TEMPERATURE

E ESE-M8G138-A1
E ESE-M8G138-A2

NO PART X REF

1. SCOPE

The material defined by this specification is a superalloy steel core surrounded by a jacket of braided asbestos and superalloy/stainless steel wire.

When A1 or A2 suffix is not specified, A1 is the mandatory material.

2. APPLICATION

This specification was released originally for material used as a seal in the catalytic converter.

3. REQUIREMENTS

3.1 CONSTRUCTION

3.1.1 Superalloy Core

ESE-M2A102-A

3.1.2 Jacket
(ASTM D 299)

ESE-M8G138-A1

64 yarns braided on 32 carrier braider, 2 ends per carrier.

ESE-M8G138-A2

64 yarns braided on 32 carrier braider, 1 end per carrier.

3.2 YARN (ASTM D 299)

3.2.1 Description

ESE-M8G138-A1

260/4/1 - 0.002 in (0.05 mm) wire

ESE-M8G138-A2

65/2-1/0 - 0.002 in (0.05 mm) wire

3.2.2 Weight

ESE-M8G138-A1

5300 $\pm$ 375 yd/lb (10700 $\pm$ 750 m/kg)

ESE-M8G138-A2

2940 $\pm$ 206 yd/lb (5940 $\pm$ 420 m/kg)

3.2.3 Twist

4.1 - 4.7 Z turns/in (161 - 185 Z turns/m)

Date	Para. No.	Revisions
1978 07 17		Metricated & Retyped EESH-RD782440E SUPP #2
1973 09 20		Released 2D3-17

8001 1392

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Engineering Material Specification

ESE-M8G138-A1
ESE-M8G138-A2

3.2.4 Wire

ESE-M8G138-A1
ESE-M2A101-A

ESE-M8G138-A2
SAE-30302

Except;

Tensile strength, psi (MPa)	115 000-160 000 (793 - 1103)	105 000 - 145 000 (724 - 1000)
Yield Strength, psi (MPa)	85 000 - 120 000 (586 - 827)	45 000 - 80 000 (310 - 552)
Elongation, 10 in (254 mm), % min	10	10

3.2.5 Asbestos, min
(ASTM D 1918)

99%

3.3 CONDITIONING

Condition all specimens for 4 h at $23 \pm 2^{\circ}\text{C}$ and $50 \pm 2\%$ R.H. atmosphere.

3.4 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

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RAYDESTOS MANHATTAN

CL-73-1625 N

2001 1393

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Engineering Material Specification

Material Name

Specification Number

GASKET, STEEL CORE - ASBESTOS/WIRE - HIGH TEMPERATURE

E ESE-M8G138-B1
E ESE-M8G138-B2
NO PART X REF

1. SCOPE

The material defined by this specification is a stainless steel core surrounded by a jacket of braided asbestos and super alloy/stainless steel wire.

2. APPLICATION

This specification was released originally for materials used as a seal in the catalytic converter.

3. REQUIREMENTS

All test methods performed per ASTM D 299 unless otherwise specified.

3.1 CONSTRUCTION

3.1.1	Stainless Steel Core	SAE 30316
3.1.2	Jacket:	64 yarns braided on 32 carrier braider, 2 ends per carrier.

3.2 YARN

3.2.1	Description	130/2/1 - 0.002 in (0.05 mm) wire
3.2.2	Weight	5300 ± 370 yd/lb (10700 ± 750 kg/m)
3.2.3	Twist	4.1 - 4.7 Z turns/in (161 - 185 Z turns/m)

3.2.4	Wire (ASTM E 8)	ESE-M8G138-B1 ESE-M2A101-A	ESE-M8G138-B2 SAE 30316
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EXCEPT;			
Tensile Strength, psi (MPa)	115,000-160,000 (793 - 1103)	100,000-130,000 (689 - 931)	
Yield Strength, psi (MPa)	85,000-120,000 (586 - 827)	60,000-80,000 (276 - 552)	
Elongation, 10 in (254 mm), %, min	10	20	

3.2.5	Asbestos, min (ASTM D 1918)	99%
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Date	Para. No.	Revisions
1979 03 13		Metricated and Retyped # CE3H-RS7B2440-E SUPP 22
1977 03 11		Released CBG3-CC774314-E

Eng Res 3948-s
June 77

June 77

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8901 1394



3.3 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

R075

RAYBESTOS MANHATTAN



Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS SHEET-HEAT INSULATING

A ESA-M8G140-A

1. SCOPE

The material defined by this specification is a high temperature, heat insulating material composed of asbestos, inert fibers and a carbonized bonding ingredient.

2. APPLICATION

This specification was released originally for material used as a gasket for the exhaust system.

3. REQUIREMENTS

3.1 LINEAR SHRINKAGE, max

With grain	6%
Across grain	8%
Thickness	15%

Test Method: Age specimens 24 h at 732°C, then for additional 2 h at 982°C.

3.2 IGNITION LOSS, max (2 h at 816°C) 25%

3.3 COMPRESSIBILITY, max (ASTM F 36, Procedure "A") 25%

3.4 HARDNESS, DUROMETER "D" (ASTM D 2240) 80 - 90

3.5 WEIGHT 6-8 oz/ft² (1.83-2.44 kg/m²) (0.060 in (1.52 mm) nominal thickness)

3.6 MOISTURE CONTENT, max 2%

Test Method: Condition samples at 102 ± 3°C in a mechanical convection oven to constant weight.

3.7 HUMIDITY PICKUP, max 5%

Test Method: Condition samples for 2 h at 102 ± 3°C, then place in humidity cabinet at 95-100% R.H. at 38°C for 24 h. Reweigh immediately.

Date	Para. No.	Revisions	
1974 01 10		Metricated, Renumbered & Retyped CAH2 823385	
1973 09 11		Released AC2-57	F. P. Farnsworth / Cd

8001 1306



3.8 FLUID ABSORPTION, max

20% for each fluid

Test Method: Soak sections for 24 h at $23 \pm 2^{\circ}\text{C}$ separately in tap water and ASTM Reference Fuel "B". Remove, blot and reweigh.

3.9 STABILITY

- The material shall not disintegrate or become spongy after the immersion test, even though the amount of absorbed liquids was within specified limits of para 3.8.

3.10 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

5. GENERAL INFORMATION

This data is for information only and is not a requirement.

5.1 COMPOSITION

Asbestos
Inert Fillers and Carbonized Bonding Agent

75 - 85%
Balance

R075

KAYBESTOS MANHATTAN

CL-73-1625N

JUN 21, 1979

PEO	MATERIAL	PREFIX	BASE	SUFFIX	CROSS REFERENCE - MATERIAL/ PART NUMBER	SEQ. FILE CONTROL NUMBER	DESCRIPTION	WEIGHT	PAGE 1357 COMMENT
ENGINE	ESE-MBG124A	E0SE	9L438	AB	OC3A0413127		GASKET-INT MANF INTNL COOLER	.00	
ENGINE	ESE MBG124A	E0SE	9L438	BB	OC3A0413101		GASKET-INT MAN INTNL COOLER	.00	
ENGINE	ESEMBG124A	E0SE	9L438	CA	OC3A0413110		GSKT-INT MANIF INTER COOLER	.00	
EED	ESFMBG126A	C8AF	14A427	B	ODAA1407005	DB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODAA1407006	DB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODAA1407702	DB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODCA1407100	DB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODDA1407101	DB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODQR1407001	GB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODQR1407001	HB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODQR1407003	GB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODQR1407003	HB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODQR1407002	GB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODQR1407002	HB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODQR1407004	GB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODQR1407004	HB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODSA1407012	DB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODSA1407014	DB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODVA1407804	DB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODVA1407805	DB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODGA1407101	GB	GASKET-WDO REG YOKE	.00	
EED	ESFMBG126A				ODGA1407101	JB	GASKET-WDO REG YOKE	.00	
ENGINE	ESEMBG127A	D5AE	6584	AA	OC3A0528011		GSKT-VALV P/A COVER	.00	
ENGINE	ESEMBG127A	D7VE	6584	AA	OC3A0532070		GASKET-VALVE ROCKER ARM COVER	.00	
ENGINE	ESE MBG127 A	B1SM	6710	A4B	1C3A0587021		GASKET-OIL PAN RH	9999.99	
ENGINE	ESE MBG127 A	B1SM	6710	ASB	1C3A0583049		GSKT-OIL PAN RH	9999.99	
ENGINE	ESEMBG127A	B1SM	6711	A4B	1C3A0587020		GASKET OIL PAN LH	9999.99	
ENGINE	ESE MBG127 A	B1SM	6711	ASB	1C3A0583048		GSKT-OIL PAN LH	9999.99	
ENGINE	ESEMBG127A	D3UE	6753	AA	OC3A0566015		GASKET-OIL LEVEL IND BOSS	.00	
ENGINE	ESEMBG127A3	B1SM	6710	A12B	1C3A0583057		GASKET-OIL PAN RH	9999.99	
ENGINE	ESEMBG129A	D0AE	6710	B	OC3A0583080		GASKET-OIL PAN RH	.00	
ENGINE	ESEMBG129A	D4ZE	6710	AA	OC3A0583010		GASKET-OIL PAN-RH	.00	
ENGINE	ESE MBG129 A	D9ZE	6710	AA	OC3A0583001		GSKT-OIL PAN R.H.	.00	
ENGINE	ESEMBG129A	D0AE	3711	B	OC3A0583085		GASKET-OIL PAN L H	.00	
ENGINE	ESEMBG129A	D4ZE	6711	AA	OC3A0563015		GASKET-OIL PAN-LH	.00	
ENGINE	ESE MBG129 A	D9ZE	6711	AA	OC3A0583002		GSKT-OIL PAN L.H.	.00	
ENGINE	ESEMBG136A	ESE	MBG136	A	OC3A2427040		GASKET-ASBESTOS & NEOPRENE	9999.99	
CHASSIS	ESAMBG140A	D52A	28608	AA	0B1AC6C2437		INSUL-PRK/PRK CONTR HEAT	.01	
CHASSIS	ESAMBG140A				0B2A06C2437		INSUL-PRK/PRK CONTR HEAT	.01	
CHASSIS	ESAMBG140A				1B2A06C2437		INSUL-PRK/PRK CONTR HEAT	.01	
CHASSIS	ESAMBG140A	D5/A	58266	AA	0BDA0903020		GSKT ASY-RESON INLET PIPE	.03	
CHASSIS	ESAMBG140A				0BTA0903170		GSKT ASY-RESON INLET PIPE	.03	
CHASSIS	ESAMBG140A	D50A	58266	AA	0BDA0902029		GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				0BDA0903072		GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				0BDA0903072		GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				0BVA090C207		GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				0BZA090C207		GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				1BAA0902029		GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				1BDA090C3072		GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				1BDA090C3072		GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				1BDA090C3072		GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				1BVA0902029		GASKET ASY-RESONATOR	.03	
CHASSIS	ESAMBG140A				1BZA090C3072		GASKET ASY-RESONATOR	.03	
TRPO	ESAMBG140A	E0TA	58266	AA	0KGA0904527		GSKT ASY-RESON INLT PIP	.00	
ENGINE	ESE-MBG142-A	D7TE	6584	AA	OC3A0639039		GSKT-VALVE P/A COVER	.00	
ENGINE	ESE MBG142A	B1SM	6584	D5A	1C3A0509081		GASKET-VALV ROCKER ARM CVR	9999.99	
ENGINE	ESE MBG142 A	B1SM	6584	D6A	1C3A0509029		GSKT-VALV ROCKER ARM CVR	9999.99	

H001 1398

PQ



Engineering Material Specification

Material Name

Specification Number

**GASKET, ASBESTOS/PHENOLIC RESIN-GRAPHITE COATED-
HIGH TEMPERATURE**

E ESE-M8G143-A

1. SCOPE

The material defined by this specification is a high temperature heat insulating material composed of asbestos, phenolic resin and graphite.

2. APPLICATION

This specification was released originally for material used as a spacer-gasket between the carburetor and intake manifold.

3. REQUIREMENTS

All tests shall be conducted in accordance with ASTM F 104, Type 1 material or SAE J 90 unless otherwise specified. Test specimens are to be selected from finished gaskets when practicable.

3.1 CONSTRUCTION

The spacer-gasket consists of an asbestos board reinforced with a high temperature phenolic binder, coated on all the outer edges with graphite and with all the bolt holes reinforced with phenolic bushings.

3.2 DENSITY, min 70 lb/ft³ (1121 kg/m³)
(Type 2)

3.3 COMPRESSIBILITY 10 - 17%
(ASTM F 36, 5000 psi (34.5 MPa) load)

Recovery, min 45%

3.4 TENSILE STRENGTH, min 800 psi (5.5 MPa)

3.5 HEAT AGING

	22 h at 260°C	22 h at 538°C
Weight Change, % max	-12	-30
Compressibility, %	15-25	20-35
Recovery, % min	25	20

Test Method: Place 3 weight change samples (1 x 2 in (25 x 51 mm) x sample thickness or any sample size which is practicable) between 4 x 5 x 1/2 in (100 x 125 x 13 mm) steel plates. Place in furnace set at 260°C or 538°C for 22 h. Cool and determine weight change, then compressibility and recovery.

Date	Para. No.	Revisions
1978 08 02		Metricated, Renumbered & Retyped CE34-RD752440E Supp 5
1974 08 28		Released E3D-710728

E001 1399

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Eng Res
June 77 3948-a

PRODUCED BY EOPD

**3.6 LIQUID IMMERSION**
(22 h at 23 ± 2°C)

	ASTM Fuel "B"	ASTM #3 Oil	Distilled Water
Thickness Change, % max	+5	+5	+10
Weight Change, % max	+33	+36	+30
Compressibility, % 5000 psi (34.5 MPa)	15-25	15-25	24-36
Recovery, % min	40	40	35

3.7 PHENOLIC BUSHINGS

3.7.1	Compressive, Strength, min (ASTM D 695)	10 000 psi (69 MPa)
3.7.2	Deflection at 10 000 psi (69 MPa), max (ASTM D 695)	10%
3.7.3	Removal Force From Gasket, min	100 lb (445 N)
3.7.4	Density, min (ASTM D 792)	87 lb/ft ³ (1394 kg/m ³)

3.8 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

F 149 A

F.D. FARNUM CO.

R-100

JUN 21, 1979

PEO

MATERIAL

PREFIX

BASE

SUFFIX

MATERIAL CROSS REFERENCE - MATERIAL PART NUMBER SEQ.

FILE CONTROL NUMBER

DESCRIPTION

WEIGHT

PAGE 1398

COMMENT

ENGINE	ESCMRG142A2	D9BE	6753	AA	0C3A0568100	GSKT-OIL LEVEL INDIC BOSS	.00	
ENGINE	ESEMNG142A2	FOAE	6753	AA	0C3A0568100	GSKT-OIL LVL IND BOSS	9999.99	
ENGINE	ESEMNG142A2	FOIE	6753	AA	0C3A0568100	GASKET-OIL LEVEL IND BOSS	.00	
ENGINE	ESEMNG142A2	FOUE	6753	AA	0C3A0568107	GSKT-OIL LVL IND BOSS	9999.99	
ENGINE	ESE-MRG143A	D7AE	9C477	A1B	0C3A0517061	GASKET-LYR TO INTAKE MANIF.	.00	
ENGINE	ESI-MRG143-A	D9IE	9C477	AC	0C3A0517004	GSKT-CARB TO INTAKE MANIFOLD SPACE	.00	
ENGINE	ESEMNG144A	E0SE	9C484	BC	0C3A27409160	GASKET-INT MAN OPENING CVR	.01	
BEPE	ESUMRG145A	D9AB	5460122	AA	0AAA0120091	INS RR ST BEL ANC	.02	
BEPE	ESUMRG145A				0AVA0106054	INS RR ST BEL ANC	.02	
BEPE	ESUMRG145A	D7EB	6260122	AA	0A2A2611004	INS PR ST BEL ANC	.02	
BEPE	ESUMRG145A				CASA0106040	INS RR ST BEL ANC	.02	
BEPE	ESUMRG145A				0A1A3115067	INS PR ST BEL ANC	.02	
BEPE	ESUMRG145A				0A2A3115067	INS RR ST BEL ANC	.02	
BEPE	ESUMRG145A	D7DB	6660122	AA	0ADA2611002	INS PR ST BEL ANC	.03	
ENGINE	ESI-MRG143-A	D9EE	9448	BA	0C3A0443150	GASKET-EXH MANIFOLD	.00	
ENGINE	ESEMNG149A	E1EE	9448	DA	1C3AC043069	GSKT-EXH MANIF	.00	
CHASSIS	ESEMNG149A	F0BC	9451	AB	0C3A043093	GSKT-EXH MANIF TO EXH PIPE	.00	
CHASSIS	ESEMNG149A				0B1AC03002	GSKT-EXH MANIF TO EXH PIPE	.00	
CHASSIS	ESEMNG149A				0B2A0103002	GSKT-EXH MANIF TO EXH PIPE	.00	
BEPE	ESUMRG12A	FOAB	5404100	AWA	0AAA2102021	VIS ASY 1/S	1.20	
BEPE	ESUMRG12A	FOAB	5403100	CWA	0AAA2102091	VIS ASY 1/S	1.90	
BEPE	ESUMRG12A	E0SB	6604100	AWA	0A2A2103001	VIS ASY 1/SO	.95	
BEPE	ESUMRG12A				0ASA0105593	VIS ASY 1/SO	.95	
BEPE	ESUMRG12A	E0SB	6604100	BWA	0A2A2103525	VIS ASY 1/S	.00	
BEPE	ESUMRG12A				0ASA0105587	VIS ASY 1/S	.00	
EED	ESFM9G17A	D7AF	11080	AA	*D9L1307006	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A	D8AF	11080	AA	*D9A1307001	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307001	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307005	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307005	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307005	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307005	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307031	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307031	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307035	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307035	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307036	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307036	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307036	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307031	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307031	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307031	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307031	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307040	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307040	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307042	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307042	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307043	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9A1307043	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9L1307002	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9L1307002	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9L1307003	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9L1307003	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9L1307004	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9L1307004	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9L1307433	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9L1307433	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESFM9G17A				*D9L1307434	COIL ASY-STR MTR FLD SHUNT	.00	

8001 1401



Engineering Material Specification

Material Name

Specification Number

GASKET, STEEL CORE-ASBESTOS/NITRILE RUBBER
GASKET, STEEL CORE-ASBESTOS/POLYACRYLATE RUBBER

E ESE-M8G144-A1
E ESE-M8G144-A2

1. SCOPE

The materials defined by this specification consist of asbestos with a synthetic rubber binder secured to both sides of a low carbon steel core.

2. APPLICATION

These specifications were released originally for materials used as intake manifold gaskets where high compressive strength is required.

3. REQUIREMENTS

3.1 CONSTRUCTION

The gasket consists of a low carbon steel core with a material consisting of asbestos and synthetic rubber binder bonded to each side of the steel core.

3.1.1 Steel Core

Low carbon steel, thickness as specified on engineering drawing.

3.1.2 Asbestos and synthetic rubber binder

Fabrication

The asbestos sheet shall be plied uniformly and bonded to each side of the steel core to meet requirements of the application at the thickness specified on engineering drawing.

3.2 FINISHED GASKET

All tests shall be conducted in accordance with ASTM F 104, Type 1 materials, unless otherwise specified.

3.2.1 Immersion in Liquids

Distilled Water

22 h at boiling

Permanent Antifreeze
(ESE-M97B18-C) and Water - 50/50

48 h at boiling

After immersion in above fluids, as specified, the asbestos shall be firm and must not separate from the steel core.

Date	Para. No.	Revisions
1978 07 14		Metricated. Renumbered & Retyped CE3H-RD75242-E
1976 07 14		Released CE3F-RD890661-E

Page 1 of 3

201 1402



	ESE-M8G144-A1	ESE-M8G144-A2
3.2.2	Original Properties	
	Compressibility, % (ASTM F 36, 5000 psi (34.5 MPa) load)	11 - 22 11 - 22
	Recovery, % min	35 30
3.2.3	Immersion in ASTM No. 1 Oil (5 h at 149°C)	
	Compressibility, %	10 - 22 10 - 22
	Recovery, % min	35 35
	Thickness Change, % max	10 10
	Weight Change, % max	20 15
3.2.4	Immersion in ASTM No. 3 Oil (5 h at 149°C)	
	Compressibility, %	15 - 27 12 - 25
	Recovery, % min	35 30
	Thickness Change, % max	15 12
	Weight Change, % max	20 18
3.2.5	Immersion in ASTM fuel "B" (5 h at 23 ± 2°C)	
	Compressibility, %	15 - 30 12 - 25
	Recovery, % min	40 40
	Thickness, Change, % max	12 10
	Weight Change, % max	15 15
3.2.6	Air Aging (22 h at 204°C)	
	Compressibility, %	5 - 15 10 - 20
	Recovery, % min	45 35
	Weight Change, % max	-3 -2



Engineering Material Specification

ESE-M8G144-A1
ESE-M8G144-A2

ESE-M8G144-A1

ESE-M8G144-A2

3.2.7 Binder
(Major Constituent) Nitrile Polyacrylate

3.2.8 INFRARED SPECTROPHOTOMETRY, BINDER

Ford Motor Company, at its option, may conduct infrared analysis of material/parts supplied to this specification. The curves established for initial approval shall constitute the reference standard and shall be kept on file at Central Laboratory. All samples shall produce curves that correspond to the reference standard when tested under the same conditions as those specified on the master curve.

3.3 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure J-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

(A1) F 315 A

FELT PROD. MFG. CO.
600 HILTON
FERNDAL, MICH. 48220
(ILL. 312-761-4500)

L-2205-Z
W/PTFE COATING

V 782C

VICTOR

SILICOR 620-630

(A2) M141A

M. CORD CORP.

M. CORPAC IV
PERFORATED &
ADHESIVE BONDED

JUN 21, 1979

PEC	MATERIAL	PREFIX	BASE	SUFFIX	CROSS REFERENCE - MATERIAL PART NUMBER SEQ.	FILE CONTROL NUMBER	DESCRIPTION	WEIGHT	PAGE 1358
									COMMENT
ENGINE	ESEMG142A2	D9BE	6753	AA	0C3A056R100		GSKT-OIL LEVEL INDIC BOSS	.00	
ENGINE	ESEMG142A2	F0AE	6753	AA	0C3A056R100		GSKT-OIL LVL IND BOSS	\$999.99	
ENGINE	ESEMG142A2	E0TE	6753	AA	0C3A056R100		GSKT-OIL LEVEL IND BOSS	.00	
ENGINE	ESEMG142A2	E0UE	6753	AA	0C3A056R100		GSKT-OIL LVL IND BOSS	\$999.99	
ENGINE	EST-MRG143A	D7AE	9C477	A1B	0C3A0517061		GASKET-CVR TO INTAKE MANIF.	.00	
ENGINE	EST-MRG143-A	D9TE	9C477	AC	0C3A0517004		GSKT-CVR TO INTAKE MANIFOLD SPACE	.00	
ENGINE	ESEMG144A	E0SE	9C484	BC	0C3A2409166		GASKET-INT MAN OPENING CVR	.01	
BEPE	ESEMG145A	D9AB	5460122	AA	0AAA0120001		INS RR ST BEL ANC	.02	
BEPE	ESEMG145A				0AAV0106054		INS RR ST BEL ANC	.02	
BEPE	ESEMG145A	D7EB	6260122	AA	0AAQ2611004		INS RR ST BEL ANC	.02	
BEPE	ESEMG145A				0ASA0106046		INS RR ST BEL ANC	.02	
BEPE	ESEMG145A				0ATA3115067		INS RR ST BEL ANC	.02	
BEPE	ESEMG145A				0AZA3115067		INS RR ST BEL ANC	.02	
BEPE	ESEMG145A	D7DB	6660122	AA	0ADA2611007		INS RR ST BEL ANC	.03	
ENGINE	EST-MRG149-A	D9EE	9448	BA	0C3A0443156		GASKET-EXH MANIFOLD	.00	
ENGINE	ESEMG149A	E1EE	9448	DA	1C3AC443060		GSKT-EXH MANIF	.00	
CHASSIS	ESEMG149A	E0BC	9451	AB	0BAC0433003		GSKT-EXH MANIF TO EXH PIPE	.00	
CHASSIS	ESEMG149A				0B1A0101002		GSKT-EXH MANIF TO EXH PIPE	.00	
CHASSIS	ESEMG149A				0B2A0103002		GSKT-EXH MANIF TO EXH PIPE	.00	
BEPE	ESEMG12A	E0AB	5404100	AWA	0AAA2102021		VIS ASY 1/S	1.20	
BEPE	ESEMG12A	E0AB	5404100	CWA	0AAA2102091		VIS ASY 1/S	1.90	
BEPE	ESEMG12A	E0SB	6604100	AWA	0AAQ2103001		VIS ASY 1/SD	.95	
BEPE	ESEMG12A				0ASA0105593		VIS ASY 1/SD	.95	
BEPE	ESEMG12A	E0SB	6604100	BWA	0AAQ2103525		VIS ASY 1/S	.00	
BEPE	ESEMG12A				0ASA0105582		VIS ASY 1/S	.00	
EED	ESEMG17A	D7AF	11080	AA	*D9L1307004	XUDE	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A	D9AF	11080	AA	*D9A1307001	WADA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307004	NADA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307005	KADA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307005	LADA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307006	KADA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307006	LADA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307031	AADA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307031	ZPDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307035	ARBA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307035	ZRDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307036	ARBA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307036	ZRDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307038	ACDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307038	ZRDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307039	ARBA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307039	ZRDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307040	ARBA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307040	ZRDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307042	ARBA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307042	ZRDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307043	JADA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9A1307043	ZRDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9L1307002	CADA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9L1307002	ZRDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9L1307003	CADA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9L1307003	ZRDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9L1307004	HADA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9L1307004	ZRDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9L1307433	CAFA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9L1307433	ZRDA	COIL ASY-STR MTR FLD SHUNT	.00	
EED	ESEMG17A				*D9L1307434	CAFA	COIL ASY-STR MTR FLD SHUNT	.00	

PG

9001 1465



Engineering Material Specification

Material Name

Specification Number

INSULATOR, ASBESTOS/RESIN-BONDED-SEAT BELT ANCHOR

3 VESB-MBG145-A

1. SCOPE

The material defined by this specification is a moisture resistant, high temperature resinated fiberboard, fabricated to provide maximum heat insulating properties.

2. APPLICATION

This specification was released originally for material used as an insulator between the rear seat belt anchor tabs and the floor pan in 1976-1977 vehicles.

3. REQUIREMENTS

3.1. CONDITIONING

All test values indicated herein are based on material conditioned in a controlled atmosphere of $23 \pm 2^{\circ}\text{C}$ and $50 \pm 5\%$ relative humidity for 24 h prior to testing and tested under the same controlled conditions.

3.2. COMPOSITION (ASTM D 1918)

Asbestos Fibers	78 - 92%
Bonding Resin	8 - 22%

3.3. DENSITY (SAE J 315b)

60-70 lb/ft³ (962-1122 kg/m³)

3.4. THICKNESS SWELL INCREASE, max (SAE J 315b)

11%

3.5. THERMAL CONDUCTIVITY, "K" VALUE, max (ASTM C 177, 24°C mean temperature)

0.50 BTU in/h ft² °F (0.07 W/mK)

3.6. COMPRESSION, max (ASTM F 36, Procedure "H")

Original	32%
After 5 h at 260°C	35%
After 24 h water immersion	38%

3.7. RECOVERY, min (ASTM F 36, Procedure "H")

Original	45%
After 5 h at 260°C	30%
After 24 h water immersion	45%

8001 1406



Date	Para. No.	Revisions
1978 08 11		Metricated, Renumbered & Retyped CAHI-RD572066-78
1976 07 16		Released CAPI-CR 563645-1

Eng Res 3948-a
June 77

WJB

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3.8 TENSILE STRENGTH, min
(ASTM F 39, except rate of extension shall be 25.4 mm/min)

Original	470 psi (3.2 MPa)
After 5 h at 260°C	270 psi (1.9 MPa)
After 24 h water immersion	178 psi (1.2 MPa)

3.9 WEIGHT
(SAE J 315b)

Original	0.25-0.29 lb/ft ² (1.24-1.44 kg/m ²)
After 5 h at 260°C, Change, max	-11%
After 24 h water immersion Change, max	+57%

3.10 STIFFNESS
(SAE J 949, 51 mm span)

Original, max	10.2 x 10 ⁵ psi (7.0 GPa)
After 5 h at 260°C, max	8.4 x 10 ⁵ psi (5.8 GPa)
After 24 h water immersion, min	2.5 x 10 ⁵ psi (1.7 GPa)

V 3.11 FLAMMABILITY

In order to comply with Federal Motor Vehicle Safety Standard No. 302, the materials, portions of components, and composites shall not burn, or transmit a flame across its surface, at a rate of more than 4 in (101 mm) per min. To demonstrate compliance, the sample size and method of testing shall be in accordance with FLTM BN 24-2.

3.12 PERFORMANCE - ENVIRONMENTAL AGING

All materials, portions of components, and composites defined by this specification that have not been treated, modified or reformulated and exceed a max burn rate of 3.0 in (76 mm) per min as specified by the Flammability Lot Sampling Plan of FLTM BN 24-2, must be evaluated for permanency of the materials' flame retardant properties per ESB-M25P3-A according to the accelerated environmental aging requirements applicable to the basic material category of this particular specification.

Any material, portions of components, and composites defined by this specification that have been treated, modified or reformulated to conform to Flammability Lot Sampling Plan of FLTM BN 24-2, regardless of max burn rate, must be evaluated for both permanency of materials' flame retardant properties and changes in mechanical, chemical and physical properties per ESB-M25P3-A applicable to the basic materials category of this particular specification.

3.13 FLAMMABILITY TEST PROGRAM

Materials, portions of components, and composites governed by this specification must also comply with the requirements of VES-D3AB-11014-AA.

8001 1407

1978 08 11
Eng Res 0000 L

WFB

Page 2 of 3



3.14 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

B 117 A

BANKS BROS. CORP.

317 NICEL

520 NEW CTR. BLDG.

DETROIT, MICH. 48202

F 149 A

F. D. FARNUM CO.

17190-SR-2

JUN 21, 1979

PCO	MATERIAL	PREFIX	BASE	SUFFIX	FILE CONTROL NUMBER	DESCRIPTION	WEIGHT	PAGE 1338	COMMENT
ENGINE	ESFM9G142A2	D9BE	6753	AA	0C3A0568100	GSKT-OIL LEVEL INDIC BOSS	.00		
ENGINE	ESFM9G142A2	FOAE	6753	AA	0C3A0568105	GSKT-OIL LVL IND BOSS	9999.99		
ENGINE	ESFM9G142A2	LOTE	6753	AA	0C3A0568105	GASKET-OIL LEVEL IND BOSS	.00		
ENGINE	ESFM9G142A2	EOUE	6753	AA	0C3A0568107	GSKT-OIL LVL IND BOSS	9999.99		
ENGINE	ESFM9G143A	D7AE	9C477	A1B	0C3A0517069	GASKET-CVR TO INTAKE MANIF.	.00		
ENGINE	ESFM9G143-A	D9TE	9C477	AC	0C3A0517004	GSKT-CVR TO INTAKE MANIFOLD SPACE	.00		
ENGINE	ESFM9G144A	E0SE	9C484	BC	0C3A2409166	GASKET-INT MAN OPENING CVR	.01		
BEPE	ESFM9G145A	D9AB	5460122	AA	0AAA0120001	INS RR ST BEL ANC	.02		
BEPE	ESFM9G145A				0AAV0106054	INS RR ST BEL ANC	.02		
BEPE	ESFM9G145A	D7EB	6260122	AA	0AQA2611004	INS RR ST BEL ANC	.02		
BEPE	ESFM9G145A				0ASA0106046	INS RR ST BEL ANC	.02		
BEPE	ESFM9G145A				0ATA3115067	INS RR ST BEL ANC	.02		
BEPE	ESFM9G145A				0AZA3115067	INS RR ST BEL ANC	.02		
BEPE	ESFM9G145A	D7DB	6660122	AA	0ADA2611002	INS RR ST BEL ANC	.03		
ENGINE	ESFM9G149-A	D9EE	9448	BA	0C3A0443158	GASKET-EXH MANIFOLD	.00		
ENGINE	ESFM9G149A	E1EE	9448	DA	1C3AC143060	GSKT-EXH MANIF	.00		
CHASSIS	ESFM9G149A	E0BC	9451	AB	0BGA0103093	GSKT-EXH MANIF TO EXH PIPE	.00		
CHASSIS	ESFM9G149A				0B1A0103002	GSKT-EXH MANIF TO EXH PIPE	.00		
CHASSIS	ESFM9G149A				0DZA0103002	GSKT-EXH MANIF TO EXH PIPE	.00		
BEPE	ESFM9G12A	EOAB	5404100	AWA	0AAA2102021	VIS ASY 1/S	1.20		
BEPE	ESFM9G12A	EOAB	5404100	CWA	0AAA2102091	VIS ASY 1/S	1.96		
BEPE	ESFM9G12A	E0SB	6604100	AWA	0AQA2103001	VIS ASY 1/50	.95		
BEPE	ESFM9G12A				0ASA0105593	VIS ASY 1/50	.95		
BEPE	ESFM9G12A	E0SB	6604100	BWA	0AQA2103525	VIS ASY 1/S	.00		
BEPE	ESFM9G12A				0ASA0105592	VIS ASY 1/S	.00		
EED	ESFM9G17A	D7AF	11080	AA	*D9L1307004	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A	DOAF	11080	AA	*D9A1307001	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307001	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307005	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307005	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307006	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307006	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307031	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307031	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307035	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307035	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307036	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307036	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307038	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307038	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307039	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307039	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307040	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307040	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307042	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307042	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307043	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9A1307043	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9L1307002	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9L1307002	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9L1307003	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9L1307003	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9L1307004	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9L1307004	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9L1307433	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9L1307433	COIL ASY-STR MTR FLD SHUNT	.00		
EED	ESFM9G17A				*D9L1307434	COIL ASY-STR MTR FLD SHUNT	.00		

PC

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PRODUCED BY FORM



Engineering Material Specification

Material Name

Specification Number

GASKET, ASBESTOS COMPOSITION-HEAT INSULATING

A ESA-M8G147-A

NO PART X REF.

1. SCOPE

The material defined by this specification is a high temperature, heat insulating material.

2. APPLICATION

This specification was released originally for material used as a heat shield for the exhaust system.

3. REQUIREMENTS

3.1 COMPOSITION

The material shall be made of asbestos, rubber, fillers and curatives.

3.1.1 INFRARED SPECTROPHOTOMETRY AND/OR THERMAL ANALYSIS

Ford Motor Company, at its option, may conduct infrared and/or thermal analysis of material/parts supplied to this specification. The curves established for initial approval shall constitute the reference standard and shall be kept on file at Central Laboratory. All samples shall produce curves that correspond to the reference standard when tested under the same conditions as those specified on the master curve.

3.2 THICKNESS (ASTM F 104)

Original

As specified on engineering drawing

After immersion in ASTM No. 3 Oil, Change
(5 h at 149°C)

10 - 30%

3.3 TENSILE STRENGTH, min (ASTM F 104)

Original

15 MPa

After immersion in ASTM No. 3 Oil, Loss, max
(5 h at 149°C)

50%

3.4 COMPRESSIBILITY (ASTM F 104)

Original

7 - 17%

After immersion in ASTM No. 3 Oil, max
(5 h at 149°C)

30%

Date	Para. No.	Revisions	
1979 01 10		Metricated & Retyped	CAH2 P23385
1976 12 09		Released	CVF2-761281

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**3.5 RECOVERY, min
(ASTM F 104)****Original****40%****After immersion in ASTM No. 3 Oil
(5 h at 149°C)****45 - 60%****3.6 FLEXIBILITY
(ASTM F 104)****As Received****Must pass****Oven Aged 5 h at 100°C****Must pass****3.7 WATER IMMERSION, WEIGHT INCREASE, max
(ASTM F 104, 22 h at R.T.)****10%****3.8 SUPPLIER'S RESPONSIBILITY**

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

G 096 A**GARLOCK, INC.****9531****PALMYRA, N.Y. 14522****517-652-9662**



Engineering Material Specification

MATERIAL NAME

Specification Number

GASKET, STEEL SHEET-ASBESTOS/SBR

E ESE-M8G149-A

1. SCOPE

The material defined by this specification consists of asbestos with a synthetic rubber binder secured to one side of a low carbon steel sheet.

2. APPLICATION

This specification was released originally for material used as an exhaust manifold gasket where high compressive strength and high temperature resistance is required.

3. REQUIREMENTS

3.1 CONSTRUCTION

The gasket shall consist of asbestos with a synthetic rubber binder glued and/or mechanically bonded to one side of a tin plated low carbon sheet.

3.1.1 Steel Sheet

Tin plated, low carbon

3.1.2 Fabrication

The asbestos shall be plied uniformly on one side of the steel sheet to meet the requirements of the application and as specified according to individual blueprints.

3.2 FINISHED GASKET

All tests shall be conducted in accordance with ASTM F 104, Type 1 materials, unless otherwise specified.

3.2.1 Immersion in Liquids

Distilled Water

22 h at boiling

Permanent Antifreeze

48 h at boiling

(ESE-M97B18-C) and Water - 50/50

After immersion in above liquids, as specified the asbestos shall be firm and must not separate from the steel sheet.

3.2.2 Original Properties

Compressibility

10 - 30%

(ASTM F 36, 5000 psi (34.5 MPa) load)

Date	Para. No.	Revisions
RTY 01 14		Metricated, Renumbered & Retyped CE3H-RD782442-E
1977 11 18		Released CE3H-JR743601-E50

End Nos. 303A-00

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	Recovery, min	25%
3.2.3	Immersion in ASTM No. 1 Oil (5 h at 149°C)	
	Compressibility	28 - 42%
	Recovery, min	20%
	Thickness Change, max	+10%
	Weight Change, max	+15%
3.2.4	Immersion in ASTM No. 3 Oil (5 h at 149°C)	
	Compressibility	25 - 40%
	Recovery, min	22%
	Thickness Change, max	+10%
	Weight Change, max	+16%
3.2.5	Immersion in ASTM Fuel "B" (5 h at 70°C)	
	Compressibility	17 - 33%
	Recovery, min	25%
	Thickness Change, max	+8%
	Weight Change, max	+12%
3.2.6	Air Aging (22 h at 204°C)	
	Compressibility	7 - 22%
	Recovery, min	38%
	Weight Change, max	4%
3.2.7	Binder	Polybutadiene Styrene Rubber

3.3 INFRARED SPECTOPHOTOMETRY AND/OR THERMAL ANALYSIS

Ford Motor Company, at its option, may conduct infrared and/or thermal analysis of material/parts supplied to this specification. The curves established for initial approval shall constitute the reference standard and shall be kept on file at Central Laboratory. All samples shall produce curves that correspond to the reference standard when tested under the same conditions as those specified on the master curve.



3.4 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

M 141 A

MCCORD CORP.

STEELPAK #1

V 782 C

VICTOR

CARBESTOS 344

Engineering Material Specification

Material Name

Specification Number

**GASKET, RUBBER AND ASBESTOR - BEATER ADD SHEET -
HIGH TEMPERATURE**

E ESE-M8G150-A

NO PART X REF.

1. SCOPE

The material defined by this specification is a high grade gasketing material comprised of short asbestos fibers in combination with elastomeric binders.

2. APPLICATION

This specification was released originally for material used where high temperature resistance is paramount, such as a gasket for the EGR valve and carburetor spacer.

3. REQUIREMENTS

All tests shall be conducted in accordance with ASTM F 104 Type 1 material unless otherwise specified. Test specimens are to be selected from finished gaskets when practicable.

3.1 ORIGINAL PROPERTIES (All thicknesses)

3.1.1	Tensile Strength, min	2 000 psi (13.8 MPa)
3.1.2	Compressibility	18 - 28%
3.1.3	Recovery, min	40%

3.2 HEAT AGING (All Thicknesses) (22 h at $260 \pm 3^\circ\text{C}$)

3.2.1	Weight Change, max	-15%
3.2.2	Compressibility	15 to 25%
3.2.3	Recovery, min	28%

Test Method: Place 3 weight change samples 1×2 in (25×50 mm) $\times$ sample thickness and 3 tensile change $1/2 \times 4$ in (13×100 mm) $\times$ sample thickness or any sample size which is practicable between $4 \times 5 \times 1/2$ in ($100 \times 125 \times 13$ mm) steel plates. Place in furnace set at $260 \pm 3^\circ\text{C}$ for 22 h.

3.3 HEAT AGING (All thicknesses) (22 h at $540 \pm 6^\circ\text{C}$)

3.3.1	Weight Change, max	-25%
3.3.2	Compressibility	20 - 30%
3.3.3	Recovery, min	35%

Test Method: Same as in para 3.2, except set furnace at $540 \pm 6^\circ\text{C}$.

Date	Para. No.	Revisions
1978-01-30		Released by Dev # 101900-E22

Eng App 3948-a
June 77

PQ

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3.4 IMMERSION IN LIQUIDS
(Only thickness of 0.031 in (0.8 mm)
thru 0.062 in (1.6 mm) apply)

3.4.1 ASTM #1 Oil
(5 h at $150 \pm 3^\circ\text{C}$)

Thickness Increase 0 to 10%
Tensile Strength Change, max -20%

3.4.2 ASTM #3 Oil
(5 h at $150 \pm 3^\circ\text{C}$)

Thickness Increase 5 to 15%
Tensile Strength Change, max -25%

3.4.3 ASTM Fuel "A"
(5 h at $23 \pm 2^\circ\text{C}$)

Thickness Increase 0 to 5%
Tensile Strength Change, max -30%

3.4.4 ASTM Fuel "B"
(5 h at $23 \pm 2^\circ\text{C}$)

Thickness Increase 0 to 10%
Tensile Strength Change, max -60%

3.5 CREEP RELAXATION, max
(ASTM F 38, method "B", 22 h at 150°C ,
0.062 in (1.6 mm) thick only)

65%

3.6 INFRARED SPECTROPHOTOMETRY AND/OR THERMAL ANALYSIS

Ford Motor Company, at its option, may conduct infrared and/or thermal analysis of material/parts supplied to this specification. The curves established for initial approval shall constitute the reference standard and shall be kept on file at Central Laboratory. All samples shall produce curves that correspond to the reference standard when tested under the same conditions as those specified on the master curve.

3.7 SUPPLIER'S RESPONSIBILITY

- Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure I-A.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.



Engineering Material Specification

Material Name

Specification Number

LAMINATE, ASBESTOS MAT - PHENOLIC

RSP-M3156-A

1. SCOPE

The material defined by this specification is a phenolic resin impregnated asbestos mat laminate.

2. APPLICATION

This specification was released originally for material used where dimensional stability and mechanical strength are necessary at high temperatures (190°C) such as the brush holder insulator on truck starters.

3. REQUIREMENTS

3.1 TENSILE STRENGTH (ASTM D 229)

Lengthwise	19 000 psi (131 MPa)
Crosswise	12 000 psi (83 MPa)

3.2 FLEXURAL STRENGTH (ASTM D 229)

Lengthwise	22 000 psi (152 MPa)
Crosswise	20 000 psi (138 MPa)

3.3 COMPRESSIVE STRENGTH (ASTM D 229, Flat)

40 000 psi (276 MPa)

3.4 IMPACT STRENGTH, Izod, min (ASTM D 256, Method "A", Edgewise, notched)

2.5 ft-lb/in (134 J/m)

3.5 SPECIFIC GRAVITY, min (ASTM D 792)

1.6

3.6 WATER ABSORPTION, max (ASTM D 570, 24 h, 1/16 in (1.6 mm) thick)

2.0%

3.7 SUPPLIER'S RESPONSIBILITY

Material supplied to this specification must be equivalent to that originally approved. Changes in formulation or processing shall not be made without prior approval as described in Supplier Procedure 1-A.

Date	Para. No.	Revisions
1978 08 22		Metricated and Retyped CF4H-RD 567/68-29
1963 08 29		Released CF6WP412036

Eng R30
June 77 8823-0

8001 1419

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4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

U802A

UNIVERSAL OIL PROD.
NORFLEX DIV.
HARPER WOODS

710-H

1978 08 22
Eng Mat
3948-b

8001 1419

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PRO

MATERIAL

PREFIX

CASE

MATERIALS

CROSS REFERENCE - MATERIAL/PART NUMBER SEQ.

FILE CONTROL NUMBER

DESCRIPTION

WEIGHT

PAGE 1508

COMMENT

[illegible]

PROMPTED BY ENDR

5001 1420 PQ

1. Asbestos use, regulation and proposed policy
2. Memo to file-asbestos
3. Automotive related exposure studies
4. Asbestos Information Association-News and Notes
5. VMD&P involvement with asbestos

8001 14P1

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