



FILE COPY
FILE COPY

TECHNICAL REPORT

for

Garlock, Inc.

**Analysis of Eleven Gaskets from
The United States Navy Ship "Gypsy"**

31 July 1985

McCrone Proposal No. ME-1537

McCrone Environmental Services, Inc.

Norcross, Georgia

a subsidiary of

Walter C. McCrone Associates, Inc.

Chicago, Illinois

31 July 1985

Colt Industries
430 Park Avenue
New York, New York 10022

Attention: Mr. Bernard Reuben

SUBJECT: Technical Report for Garlock, Inc.
Analysis of Eleven Gaskets from the USN
Gypsie by Transmission Electron Microscopy
for Chrysotile Homogeneity

Re: McCrone Project No. ME-1537

Dear Mr. Ruben:

McCrone Environmental Services, Inc. has completed the subject sample analyses as authorized by you. Attached is our report detailing the methods used, work performed and results of samples analyzed.

We hope you have found our services helpful and our report informative. If you have any questions concerning this report or if we may be of further assistance, please do not hesitate to contact our office.

Sincerely,

Martin R. Bennett
Field Project Representative

Richard L. Hatfield
Director of Services

MRB/RLH/jir

cc: 1) Colt Industries
New York NY
1) Mr. Bernard Reuben
Colt Industries
New York NY

Technical Report for Garlock, Inc.
Analysis of Eleven Gaskets from the USN Gypsie
by Transmission Electron Microscopy for
Chrysotile Homogeneity

Eleven gaskets produced by Garlock, Inc. were presented for analyses by Transmission Electron Microscopy (TEM) for chrysotile homogeneity and the presence of possible amphibole asbestos. These eleven gaskets were taken from steam and water line flanges off the United States Navy ship (USN) Gypsie. Their sizes range from 6 to 16 inches in diameter. All of the gaskets are approximately 41 years old.

METHOD

(Transmission Electron Microscopy)

From each sample submitted, thin strips were cut from the gaskets, then split apart and separated using tweezers. Chrysotile bundles were then isolated, pulverized and suspended in deionized particle-free water where they were ultrasonified for 45 to 60 minutes. For each sample, an approximately 10 microliter drop of the suspended solution was deposited on a carbon film coated copper TEM grid and allowed to dry.

Each sample was then analyzed under Transmission Electron Microscopy at 20,700X in which 4 to 10 grid squares were examined depending on the sample distribution and/or the detection of amphibole asbestos.

Results

Analysis of the 11 samples indicates that the Garlock asbestos-containing gaskets from the USN Gypsy are virtually free of amphibole asbestos with the exception of small amounts of amosite and actinolite detected in three samples. (See Table A) Repeated analysis indicates that the amphiboles found in the gasket samples, although in small quantity, were a constituent of the material and were not caused by some form of contamination.

Table A
Results of Analysis by Transmission Electron Microscopy
for Chrysotile Homogeneity

McCrone Project No. ME-1537

Gasket No. 1

Grid Square No.	Fiber Type	Length/Width (in um)
1	*	*
2	*	*
3	*	*
4	*	*
5	*	*
6	Amosite	2.40 x 0.01
7	Amosite	0.05 x 0.004
8	Amosite	0.69 x 0.01
9	Amosite	3.60 x 0.02

Gasket No. 2

1	*	*
2	*	*
3	*	*
4	*	*
5	*	*
6	*	*

* amphibole asbestos not detected

Gasket No. 3

Grid Square No.	Fiber Type	Length/Width (in um)
1	*	*
2	*	*
3	*	*
4	Actinolite	0.14 x 0.02
5	Actinolite	0.05 x 0.01
6	*	*
7	*	*
8	Actinolite	0.10 x 0.01
9	Actinolite	0.10 x 0.04

Gasket No. 5

1	*	*
2	*	*
3	*	*
4	*	*
5	*	*
6	*	*

Gasket No. 6

1	*	*
2	*	*
3	*	*
4	*	*
5	*	*
6	Actinolite	0.17 x 0.02
	Amosite	0.12 x 0.02

* amphibole asbestos not detected

Gasket No. 6
(cont.)

Grid Square No.	Fiber Type	Length/Width (in um)
7	*	*
8	*	*
9	*	*
10	*	*
11	*	*

* amphibole asbestos not detected

Gasket No. 7

1	*	*
2	*	*
3	*	*
4	*	*
5	*	*
6	*	*

Gasket No. 8

1	*	*
2	*	*
3	*	*
4	*	*

Gasket No. 9

Grid Square No.	Fiber Type	Length/Width (in um)
-----------------	------------	-------------------------

1	*	*
2	*	*
3	*	*
4	*	*
5	*	*

* amphibole asbestos not detected

Gasket No. 10

1	*	*
2	*	*
3	*	*
4	*	*
5	*	*

Gasket "A"

1	*	*
2	*	*
3	*	*
4	*	*
5	*	*

* amphibole asbestos not detected