Unlike peas in a pod... there's one asbestos that's completely different...



"Calidria" asbestos

Short... randomly oriented... highly refined fibers make Union Carbide's "Calidria" asbestos different from other asbestos. As a result, it can be used to improve the properties of rubber and plastics where other types of asbestos cannot. In rubber, it is a low-cost reinforcing filler. In plastics, it is a highly efficient thickener and thixotrope. And it saves money too!

Harwick supplies the grade of "Calidria" asbestos that best meets your needs:

RG-244	Premium-grade thixotrope and vicosity control agent
RG-144	Low-cost vicosity control agent
High Purity	Reinforcing filler for rubber
T-135	Reinforcer and whitener for rubber
SG-200	Low-cost, general-purpose filler

Available in economical PELLET form too!

All grades except RG-244 are available as rugged pellets that give you:

- Reduced dusting, even when handled in bulk
- Easier handling with conventional equipment
- Lower freight costs
- Smooth uninterrupted flow through automatic feed equipment

Your Harwick man will be pleased to give you complete information and trial samples for your evaluation. Call him at any of the offices below.

HARWICK CHEMICAL CORPORATION

60 SOUTH SEIBERLING STREET • AKRON, OHIO 44305

Offices: Akron • Atlanta • Boston • Chicago • Memphis • Pico Rivera, Calif. San Francisco, Calif. • Trenton

HW-165

PLAINTIFF'S EXHIBIT UC-1545

cc: IGCS W. Gentsch
HBR etc
JEW
TPN
GLO 11/6/74 DS

HARWICK CHEMICAL CORPORATION

60 SOUTH SEIBERLING STREET
AKRON, OHIO 44305
PHONE: 216/784-0481
TWX: 810-431-2126

November 1, 1974

Mr. D. D. Berry
Union Carbide Corporation
Chemicals and Plastics
Tarrytown Technical Center
Tarrytown, N. Y. 10591

RECEIVED
NOV 4 1974
UCC-CALIDRIA

Dear Dan:

I have reviewed the information we have in our files on applications for Calidria Asbestos and have been able to come up with very little over and above what you already know about. I have enclosed some information which you can use on your upcoming trip:

1. Memo to Harwick Salesmen with the Rubber Roll Compound data.

2. Memo to Harwick Salesmen with the information on replacement of High Styrene Resins.

3. Memo to Harwick Salesmen with information on Calidria in Closed Cell Sponge Formulations.

The following is information reported by our salesmen:

1. Roppe Rubber Company purchases truckload quantities of Calidria HPP which they use in a cove base compound for stiffness and dimensional stability.

2. Cardinal Rubber Company purchases truckload quantities of Calidria HPP which they use in a caster wheel compound for same reasons as Roppe Rubber.

3. Goodyear Tire & Rubber, Windsor, Vermont, is still actively working with Calidria in their footwear stocks.

4. Goodyear Tire & Rubber, Akron, reported 20 point increase in Durometer with HPP vs. hard clay.

(Continued)

Union Carbide trial exhibit UC-1545: Harwick Chemical Calidria Advertisement and F. M. O'Connor Letter to D. D. B...
ACL Doc 16647 · Page 2 of 10
Published by AsbestosClaims.Law
asbestosclaims.law/library/16647/2

Mr. D. D. Berry
Union Carbide Corporation

November 1, 1974

Please note that both Roppe Rubber and Cardinal Rubber have been monitored and were found to be well within the limits set by OSHA on airborne fiber count.

We have quite a few additional companies evaluating Calidria, but I do not have specific compounding information in my files. I planned to review this with the salesmen but didn't have the opportunity to do this prior to your trip. I apologize for not doing a more thorough job.

Have a good trip and we shall look forward to seeing you on November 19, 1974. We have a full schedule planned for you.

Best personal regards.

Very truly yours,

Fran

F. M. O'Connor
Vice President-Technical

FMO:amg
Enclosures

cc: Mr. John L. Myers ✓
Union Carbide - Niagara Falls, N. Y.

INTER-OFFICE CORRESPONDENCE

HARWICK
AKRON

TO: ALL HARWICK SALESMEN

DATE: September 16, 1974

COPIES: D. F. Behney
A. L. Robinson
M. J. DeRuyter
R. G. Carter
W. E. Hansen
S. Giambra
B. Greer - MLD
Order Department
Price Department
Sales Department

FROM: F. M. O'Connor

SUBJECT: Calidria Asbestos

We have been marketing Calidria Asbestos for The Mining and Metals Division of Union Carbide for almost two (2) years. We have developed some sales for this product line but have not had great success to date. We should like to see increased activity on this product line.

Attached is an application bulletin showing some data generated in England on natural rubber roll compounds using Calidria. This shows how improved properties can be obtained using Calidria HPP and T-135. These data should be reviewed with your customers who formulate this type of compound. Two of the compounds in this study contain a new urethane crosslinker which is offered by Hughson Chemical Co, Erie-Pa. This gives better heat aging properties to natural rubber and is currently of interest to roll manufacturers.

Please note that John Myers advises that both HPP and T-135 are currently readily available and should be pushed hard.

F. M. O'Connor
Vice President - Technical

FMO/jmc

cc: G. R. Moore
L. J. Sullivan
A. M. King
H. G. Gercke
W. T. Murdock
D. A. Stauber
H. J. Sullivan
E. M. Corbett
J. T. Frankfurth
G. F. McGinnis
K. H. Irons
H. C. Cavaness
G. H. Proodian
P. E. Diehl
K. L. Lauer
R. C. Sellers

HARWICK
CHEMICAL CORPORATION
60 SOUTH SEIBERLING STREET · AKRON, OHIO 44305 · 216-798-9300

CALIDRIA ASBESTOS

RUBBER ROLL COMPOUNDS

Calidria Asbestos is an exceptionally pure, light-colored, non-abrasive asbestos fiber which has utility in many types of rubber systems. Its availability in pellet form eliminates most of the handling problems normally associated with asbestos and enables its use in compliance with standards established by OSHA. A general information bulletin titled, "Calidria Asbestos-A Low Cost, Highly Effective Reinforcer and Filler for Rubber," published by Union Carbide is available on request.

The following study has been conducted on the use of Calidria Asbestos in Rubber Roll Compounds to provide improved hardness, tear strength and resilience. These benefits are obtained both with a conventional sulfur cure and with the new urethane crosslinker which provides better heat aging resistance in natural rubber. The Calidria compounds should provide economic benefits as well since relatively high cost materials are being replaced.

TABLE I

Natural Rubber Roll Compounds
Calidria Asbestos vs. a Non-Black System
Sulfur vs. Urethane Crosslinking Mechanism

INGREDIENTS	1	2	3	4
SMR - H5	100	100	100	100
Clay	50	---	---	---
Calidria Asbestos HPP	---	25	25	25
Calidria Asbestos T-135	---	30	30	30
Stan Mag Magnesium Carbonate	50	30	30	---
Stearic Acid F-1500	1.5	1.5	---	---
Zinc Oxide - St. Joe 42-21	40.0	10.0	10.0	10.0
Desical P	---	---	4.0	4.0
Nonox WSP	1.5	1.5	1.5	1.5
TiO2	5.0	---	---	---
Sulfur	2.75	2.75	---	0.3
MBTS	1.0	1.0	---	---
Methasan (ZDMC)	---	---	2.0	2.0
Urethane Crosslinker CX-1282-224	---	---	2.5	2.5

The information contained herein is based on data and information believed to be reliable, but is presented without guarantee or warranty and the Seller disclaims any liability incurred from the use thereof. Nothing contained herein is to be construed as a recommendation for any use, including without limitation, any use in a commercial process not controlled by the Seller, nor for a use which is in violation of any existing patent, foreign or domestic, or of applicable laws and regulations.

THE SELLER MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, EXCEPT AS EXPRESSLY STATED IN SELLER'S SALES CONTRACT OR SALES ACKNOWLEDGEMENT FORM.

(Continued)

Mold Cure (minutes at 302°F)	1	2	3	4
	15	15	35	17.5
Physical Properties				
Ultimate Tensile (psi)	1805	1515	1535	1885
Ultimate Elongation (%)	315	225	240	190
100% Modulus (psi)	730	975	850	1370
300% Modulus (psi)	1765	----	----	----
Tear (lbs)	14	24	23	32
Rebound Resilience (%)				
68°F	64	47	41	50
158°F	72	50	40	58
212°F	71	51	37	60
Hardness (IRHD)	75	85	71	80
Heat Aged (48 hrs @ 212°F)				
Ultimate Tensile (psi)	1695	1470	1725	1970
ΔT, %	-6	-3	+12	+4
Ultimate Elongation (%)	245	115	195	145
ΔE,%	-22	-49	-20	-26
100% Modulus (psi)	1025	1440	1300	1860
ΔM, %	+41	+48	+53	+36
Tear, (LBS)	13	29	23	31
ΔTear, %	-7	+21	0	-3
Hardness (IRHD)	78	88	74	84
ΔH, Units	+3	+3	+3	+4
Heat Aged (24 hrs @ 248°F)				
Ultimate Tensile (psi)	1030	1000	1260	1630
ΔT, %	-43	-34	-18	-13
Ultimate Elongation (%)	165	85	155	140
ΔE, %	-48	-61	-35	-26
100% Modulus (psi)	770	----	1020	1555
ΔM, %	+6	----	+20	+14
Tear (lbs)	13	22	23	27
ΔTear, %	-7	-8	0	-16
Hardness (IRHD)	75	86	71	81
ΔH, Units	0	+1	0	+1
Rebound Resilience, %				
68°F	54 (-10)	43 (-4)	32 (-9)	45 (-5)
158°F	63 (-9)	50 (0)	36 (-4)	55 (-3)
212°F	66 (-5)	52 (+1)	38 (+1)	57 (-3)

Union Carbide trial exhibit UC-1545: Harwick Chemical Calidria Advertisement and F. M. O'Connor Letter to D. D. B... Published by AsbestosClaims.Law
ACL Doc 16647 · Page 6 of 10 asbestosclaims.law/library/16647/6

INTER-OFFICE CORRESPONDENCE

HARWICK

AKRON

TO: ALL HARWICK SALESMEN

DATE: JANUARY 22, 1974

COPIES:
D. F. Behney
A. L. Robinson
M. J. DeRuyter
R. G. Carter
W. E. Hansen
S. Giambra
B. Greer - MLD
Order Department
Price Department
Sales Department

FROM: F. M. O'CONNOR

SUBJECT: HIGH STYRENE RESIN REPLACEMENT

Two of the sources for High Styrene Resins, namely Marbon and Dewey and Almy, are reported to be discontinuing production of their High Styrene Resins. This is creating a tremendous interest in substitute materials. John Borroff, who has a wealth experience in the footwear industry, has done some work to enable us to make some suggestions to compounders on how to achieve similar increase in hardness without complete loss of processing and other physical properties.

We have several products which can be used to help this situation.

Epolene C-14-P

Polymer Applications Hardening Resins, 52-056 and 52-108

Calidria HPP

Velsicol XL-30

Harwick SD-400-MB - Hexamethylene Tetramine Masterbatch (50%)

Harwick SD-401 - Resorcinol/Stearic Acid Blend (60/40)

A suggested recipe to achieve a significant increase in hardness is as follows:

BASE RECIPE

SBR	100	phr
Hi Sil 233 (1)	50-60	phr
Velsicol XL-30	5-7	phr
Process Oil	5	phr
Carbowax 6000	1.5-2.0	phr
Resorcinol (1)	2.5	phr
Hexamethylene Tetramine (1)	1.6	phr

TO INCREASE HARDNESS ADD:

High Molecular Weight Polyethylene (2)	30 phr
or	
Phenolic Hardening Resin (3)	30 phr
plus	
Calidria HPP	20 phr

SUGGESTED ACCELERATION SYSTEM

Thiofide MBTS	1.5
DPG	0.6
Mono Thiurad	0.25
Sulfur	3.5

(1) Use of HRH system will provide much better properties. Use 2.5 phr Resorcinol and 1.6 phr Hexamethylene Tetramine as a starting point.

(2) Epolene C-14-P
Union Carbide DNPA 3130

(3) Polymer Applications 52-056 or 52-108
Ashland Chemical Arofene 6760 or 6761
These should only be used where color is not critical since they are dark colored resins.
Use of about 5 phr Stan Mag 112 M is recommended when phenolic resins are used to help maintain good cure rate.

Please note that Phenolic Hardening Resins should not be suggested when color is important. Due to the current tight supply of polyethylene, we suggest that both Epolene and Union Carbide products be evaluated. The HRH system will provide improved wetting of the filler system and give improved properties, but is not required for hardness increase. Better adhesion to substrates will be an added benefit when using this system.

We are offering this recipe as a starting point for compounders and suggest that they contact us if additional compounding advice is required.

F. M. O'Connor

FMO/emk
cc: G. R. Moore
L. J. Sullivan
A. M. King
H. G. Gercke
W. T. Murdock
D. A. Stauber
H. J. Sullivan
E. M. Corbett
J. T. Frankfurth
G. F. McGinnis
K. H. Irons
H. C. Cavaness
G. H. Proodian
K. L. Lauer
R. C. Sellers

INTER-OFFICE CORRESPONDENCE

HARWICK

AKRON

TO: ALL HARWICK SALESMEN

DATE: DECEMBER 26, 1973

COPIES:
D. F. Behney
A. L. Robinson
W. L. Lasser
M. J. DeRuyter
F. M. O'Connor
W. E. Hansen
S. Giambra
Order Department
Price Department
Sales Department

FROM: R. G. CARTER

SUBJECT: CALIDRIA ASBESTOS IN CLOSED CELL SPONGE

Attached are data which show the effect of Calidria HPP and Calidria T-135 in SMR 5 closed cell sponge formulations. Notice the dramatic increase in modulus, tensile, and elongation properties at an equivalent hardness level.

These data should be valuable in stimulating business in closed cell sponge applications.

R. G. Carter
Technical Service Representative

RGC/emk
Attachment

cc: G. R. Moore
L. J. Sullivan
A. M. King
H. G. Gercke
W. T. Murdock
D. A. Stauber
H. J. Sullivan
E. M. Corbett
J. T. Frankfurth
G. F. McGinnis
K. H. Irons
H. C. Cavaness
G. H. Proodian
K. L. Lauer
R. C. Sellers

CALIDRIA ASBESTOS
IN CLOSED CELL SPONGE

Formulation	1	2	3
SMR 5	65	100	100
High Styrene Resin	35	--	--
Silica	30	--	--
Calcium Silicate	30	--	--
Wood Cellulose	15	--	--
CALIDRIA HPP	--	50	--
CALIDRIA T-135	--	--	50
NoNox EXN	1	1	1
Paraffin Wax	1	2	2
Polyethylene Glycol	--	4	4
Dinotroso Pentamethylene Tetramine	3.5	5.3	5.3
Stearic Acid	4	3	3
Zinc Oxide	4	5	5
Sulfur	2.5	2.5	2.5
Santocure	--	2	2
Vulcafor F	1.5	--	--
	192.5	174.8	174.8
Hardness, IRDH	55	55	56
Tensile, Psi	545	1150	1595
Elongation, %	190	340	385
100%) Modulus, Psi	315	475	410
300%) Modulus, Psi	--	990	1040