PLAINTIFF'S
EXHIBIT
DUP-2683

E-C APPARATUS BULLETIN 110

Asbestest*

Test Kit for Screening Sample Materials for Possible Presence of Asbestos.

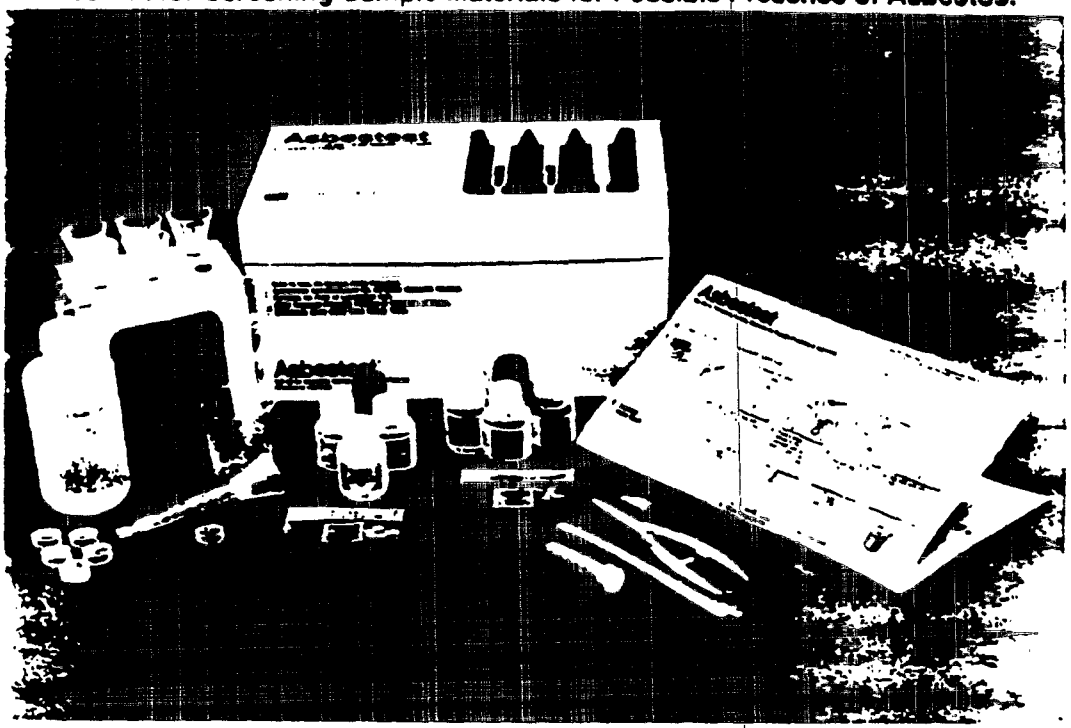


Figure 1. ASBESTEST® 55 test kit includes partitioned carrying box, 55 Chemocolumn® reaction-filter tubes, 6 Chemocolumn® funnels, 55 large reaction-filter tube caps, 55 small reaction-filter tube caps, 50 milliliter beaker, forceps, 3 milliliter syringe, Teflon® stirring rod, test tube rack, wax pencil, distilled water, 4 reagents for Magnesium analysis, 4 reagents for Iron analysis, 6 metering droppers, 5 non-asbestos control samples for Magnesium, 5 non-asbestos control samples for Iron, and color coded detailed instructions.

- **Easy to Use — No Special Training Necessary**
- **May Eliminate Other Costly Tests**
- **Inexpensive**
- **Rapid — 5 Minute Typical Assay Time**
- **Sensitive — To 1% Asbestos**
- **Complete — Nothing Else to Purchase**
- **Rugged — For Field Use**

DUP 0912924

THE FIRST STEP IN ELIMINATING ASBESTOS HAZARDS

Asbestos has been known for many years and more recently, in the last 100 years, has come into wide usage as a fireproof material, electrical insulator and a thermal insulator. The health hazards and related deaths of asbestos exposure were noted as long ago as the 1880's in France and England. Since that time, diseases associated with asbestos exposure have been well documented and include asbestosis, lung cancer and mesothelioma.

Although it is airborne asbestos which creates the health hazard, the detection of the presence of solid asbestos which may become airborne by mechanical or pneumatic disruption is the first step in eliminating the asbestos hazard.

DU 030012

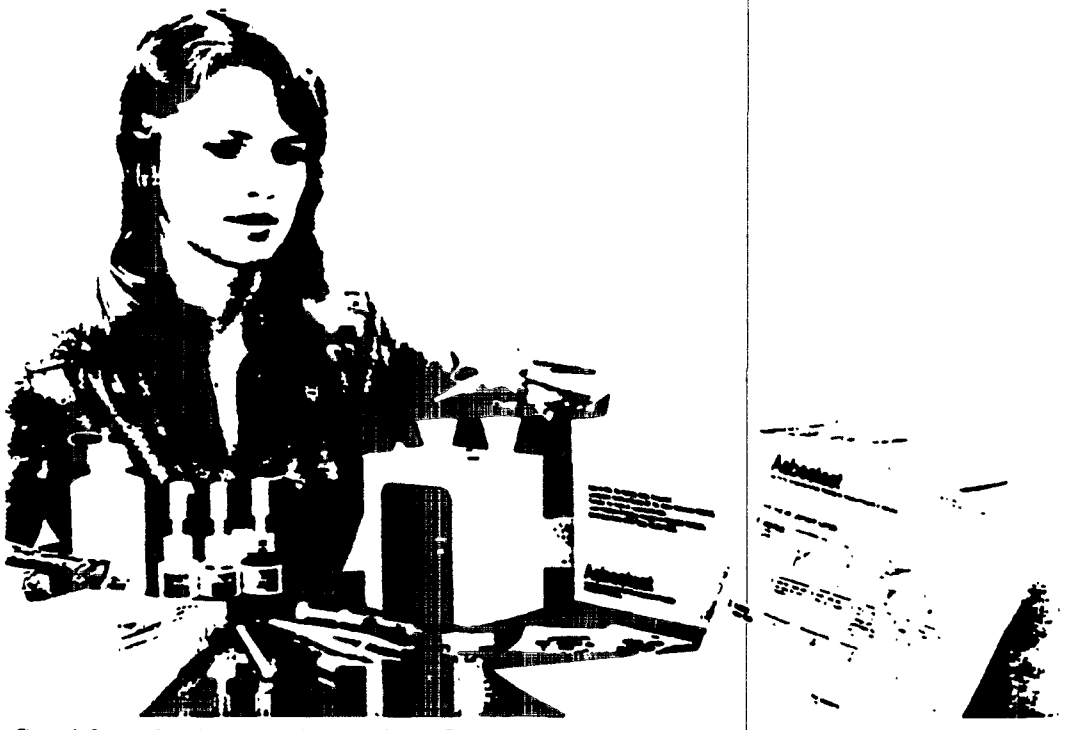


Figure 3. Step by Step Procedure is Rapid and Easy-to-Follow.

NIOSH BASED TEST

The Asbestest® is an improved procedure[1] of the "Quick Screening Test for Asbestos" developed by the National Institute for Occupational Safety and Health (NIOSH).[2] The Asbestest® Kit is complete (see Figure 1) and improves upon the NIOSH test by carrying out all manipulations in a safe saveable filter-reaction tube, the Chemocolumn.[3]

The test is conducted in a step-by-step procedure similar to water analysis for the home swimming pool. The test is intended for field use and packaged in a carrying box with all items. The basis of the test is wet chemical analysis of the asbestos bound magnesium and/or iron.

CHEMOCOLUMN[3]

The E-C Chemocolumn[4] is molded polypropylene and consists of 5 integral parts (see Figure 2). Two accessory parts are a teflon coated stirring rod and a syringe. The caps are used to retain results for future reference. The funnel is used to augment the reaction tube volume and facilitate easy addition of the reagents. The porous filter retains the solid material of interest while allowing the dissolved matter or small granular particles to be flushed from the column. The stirring rod is used to mix the sample and reagents during processing. The syringe provides pressure for rapidly washing the samples to remove unwanted and/or interfering items.

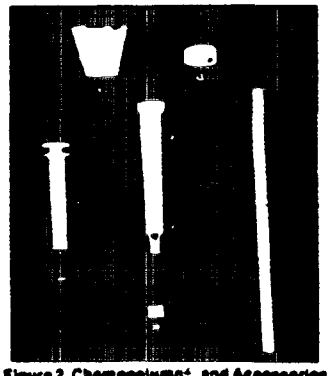


Figure 2. Chemocolumn[4] and Accessories a. Chemocolumn® reaction-filter tube. b. Chemocolumn® filter disc in place. c. Funnel. d. Top Cap. e. Bottom Cap. f. Stirring bar. g. Syringes.

FAST — ACCURATE RESULTS

The chemistries for the test are well established[5, 6] and are sensitive down to 1% asbestos in the sample which is the upper limit permitted by the Environmental Protection Agency (EPA). In a test of 100 samples known to contain at least 1% asbestos, the results showed 100% specificity.

Results of the tests are available in about 5 minutes without undo haste on the part of the user.

Since 90% of the world asbestos is Chrysotile ($3MgO \cdot 2SiO_2 \cdot 2H_2O$), a form with bound magnesium but no bound iron, the magnesium test is usually performed first. Lesser used forms are Amosite ($(FeMg)SiO_3$), Crocidolite ($(NaFe(SiO_3)_2 \cdot FeSiO_3 \cdot H_2O$), and Anthophyllite ($(MgFe)_7 \cdot Si_8O_{22} \cdot (OH)_2$). The test kit is designed to first wash away all non-asbestos unbound magnesium and/or iron then release the asbestos bound magnesium and/or iron for detection. Using the prewashing technique, as long as sufficient sample has been used, the test produces no false negative results. A few materials which are granular rather than fibrous like asbestos, have similarly bound magnesium and iron which will produce false positive results.

POSITIVE CONTROL SAMPLES PROVIDED

Included with each 55 test kit are five (5) non-asbestos control samples for magnesium and five (5) non-asbestos control samples for iron. These samples may be used for practice and saved as a reference for a positive result. The size of the control samples is similar to the recommended sample size.

DIP 0912925

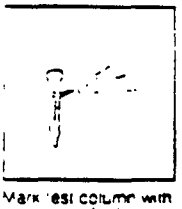


Figure 4 Clear Positive or Negative Results are Available in About 5 Minutes.

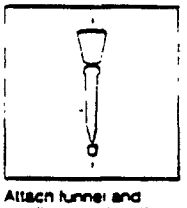
STEP BY STEP PROCEDURE

The instructions are easy to follow.

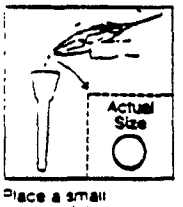
Duplicated below in capsule form are the test instructions for asbestos bound iron:



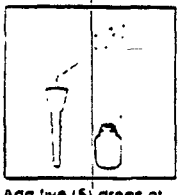
Mark test column with wax pencil for future reference



Attach funnel and small cap to column



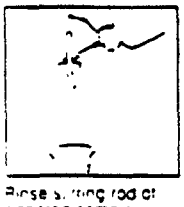
Place a small portion of the unknown sample approximately the size of a small pea into the column



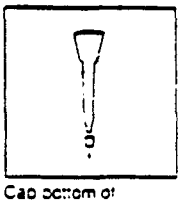
Add five (5) drops of Reagent Fe-1 Acetic Acid and five (5) drops Reagent Fe-2 Sulfuric Acid



Mix well with stirring rod



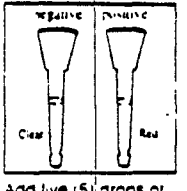
Rinse stirring rod of adhered sample wash with 50 ml distilled water from wash bottle into column. Discard into 50 ml beaker



Cap bottom of column with small cap



Add one (1) drop of Reagent Fe-3 Hydrofluoric Acid



Add five (5) drops of Reagent Fe-4 Iron Color Reagent mix and observe color



Remove funnel and cap column for storage and permanent record

DUP 0912926

COST EFFECTIVE

The rapid results and low cost of the Asbestest® is an advantage even if other tests must be employed for confirmation because only selected materials will need to be confirmed. The chart below details the initial cost, sample analysis time, and the cost per test by a typical testing laboratory.

ANALYTICAL TECHNIQUE	EQUIP COST	SAMPLE PREP & ANALYSIS TIME (MIN.)	SAMPLE SIZE	TYPICAL LAB TEST CHARGE	COMMENTS
Optical Microscopy	$ 700	20	a few fibers	$15	Some training. Not a specific result.
Polarized Light Microscopy	$ 1,500	30	a few fibers	$30	Training necessary. Very specific results.
Infrared Spectrophotometry	$12,000	30	a collection of fibers	$40	Training necessary. Not specific if mixed forms.
X Ray Diffraction	$50,000	60	pea size	$50	Training necessary. Specific results.
Electron Microscopy	$75,000	60	part of a fiber	$200	High degree of training necessary.
Thermal Analysis	$ 6,000	90	pea size	$50	Training necessary. Not specific for asbestos.
ASBESTEST	$ 125	5	pea size	$2.27	No training. Specific for asbestos.

ORDERING AND SHIPPING INFORMATION

The 55 Test EC110 ASBESTEST® Asbestos Detection Kit is complete with all materials and reagents. A small excess of each reagent is provided which should be discarded after the 55 tests have been performed. Due to transportation regulations, the kit is shipped in two parts. One part contains all of the items except the Iron Color Reagent which is shipped separately. The Iron Color Reagent is combined with the other items in the carrying box for use and storage. Useful life of reagents is one year or longer.

F.O.B. St. Petersburg, Florida — **$125.00**

Availability: From Stock

Shipping Mode: UPS Surface, U.S.A. & Canada. Air all other countries.

Payment Terms: Net 10 days

Shipping Charges: Prepaid and added to invoice for U.S.A. & Canada. Collect all other countries. Prepaid orders sent freight allowed U.S.A. & Canada.

Reagent Replacements: Order by Number, Mg-1, Fe-2, etc. — $12.00 ea.

Chemocolumn® Reaction Filter Tube Replacements: 55 Reaction Tubes with Caps and 6 Funnels
EC114 ..... $50.00

REFERENCES

1. Michaels, L. and Chissick, S.S. Ed. *Asbestos. Volume 1. Properties Applications and Hazards.* John Wiley & Sons New York, NY. 1979.
2. Peters, G.A., and Peters, Barbara J. *Sourcebook on Asbestos Diseases Medical, Legal and Engineering Aspects.* Garland STPM Press. New York NY, 1980.
3. Patent No. 4,492,759
4. Kim W.A. Carter, J.W. II and Kuper R.E., *Am. Ind. Hyg. Assoc. J.* 42, pp 198-201 1981
5. Feigl, F. *Spot Tests in Inorganic Analysis.* 5th Ed., Translated by Oesper R.E., Elsevier Publishing Co. Amsterdam. pp 161-162, 225-227. 1958
6. Furman, N.H., Ed., *Standard Methods of Chemical Analysis. Volume 1. The Element.* Sixth Edition. D. Van Nostrand Company, Inc., Princeton, NJ. pp 586-589, 608-609, 1968.

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Chemocolumn® is a Registered Trademark of E.C Apparatus Corp

E·C APPARATUS CORPORATION
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St. Petersburg, Florida 33709
Tel: (813) 344-1644
Toll Free Outside Florida: 800-624-2232
Inside Florida: 800-282-7932

DUP 0912927

Printed in U.S.A. 1-2 85

DU 030015

DUP 0912928

DU 030016

Leon

This is what I have ordered

Pls return

D.G.

Looks Good and easy to use
Lyle

E-C APPARATUS BULLETIN 110

Asbestest™

Test Kit for Screening Sample Materials for Possible Presence of Asbestos.

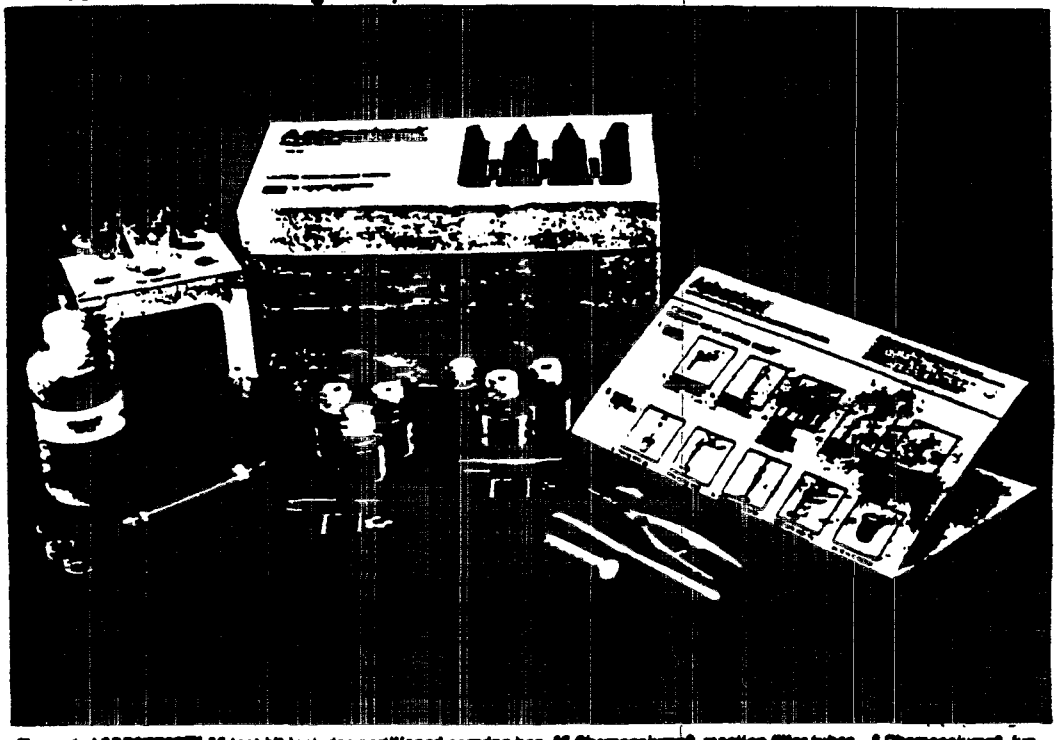

Figure 1. ASBESTEST™ 56 test kit includes partitioned carrying box, 56 Chamecolumn® reaction-filter tubes, 6 Chamecolumn® funnels, 56 large reaction-filter tube caps, 56 small reaction-filter tube caps, 56 milliliter beaker, forceps, 3 milliliter syringe, Teflon® stirring rod, test tube rack, wax pencil, distilled water, 4 reagents for Magnesium analysis, 4 reagents for Iron analysis, 3 metering droppers, 3 non-asbestos control samples for Magnesium, 3 non-asbestos control samples for Iron, and enter sealed detailed instructions.

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DUP 0912929

Although it is airborne asbestos which creates the health hazard, the detection of the presence of solid asbestos which may become airborne by mechanical or pneumatic disruption is the first step in eliminating the asbestos hazard.

DU 030017



DUP 0912930

Figure 3. Step by Step Procedure is Rapid and Easy-to-Follow.

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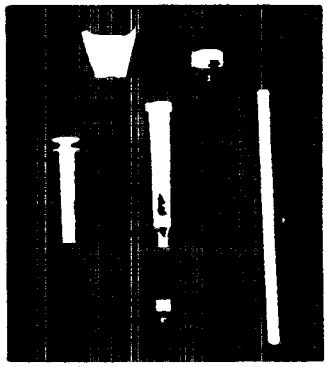

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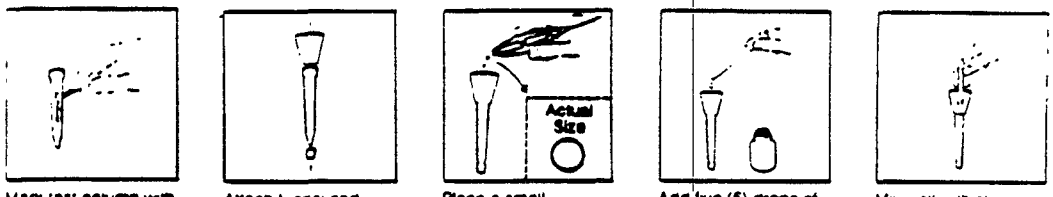


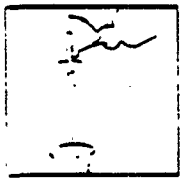
Mark test column with wax pencil for future reference

Attach funnel and small cap to column

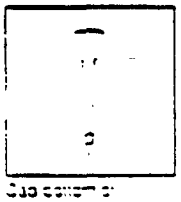
Place a small portion of the unknown sample approximately the size of a small pea, into the column

Add five (5) drops of Reagent Fe-1 Acetic Acid and five (5) drops Reagent Fe-2 Sulfuric Acid

Mix well with stirring rod.



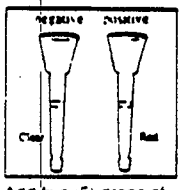
Rinse stirring rod of [illegible] sample [illegible] 50 [illegible] distilled water [illegible] column. Drain [illegible] 50 ml beaker



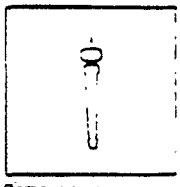
Cap bottom of [illegible]



Add one (1) drop of Reagent Fe-3 Hydrochloric Acid



Add five (5) drops of Reagent Fe-4 Iron Color Reagent, mix and observe color.



Remove funnel and cap column for storage and permanent record

DUP 0912931

COST EFFECTIVE

The rapid results and low cost of the Asbestest™ is an advantage even if other tests must be employed for confirmation because only selected materials will need to be confirmed. The chart below details the initial cost, sample analysis time, and the cost per test by a typical testing laboratory.

ANALYTICAL TECHNIQUE	EQUIP COST	SAMPLE PREP & ANALYSIS TIME (MIN.)	SAMPLE SIZE	TYPICAL LAB TEST CHARGE	COMMENTS
Optical Microscopy	$ 700	20	a few fibers	$15	Some training. Not a specific result.
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Infrared Spectrophotometry	$12,000	30	a collection of fibers	$40	Training necessary. Not specific if mixed forms.
X-Ray Diffraction	$50,000	60	pea size	$50	Training necessary. Specific results.
Electron Microscopy	$75,000	60	part of a fiber	$200	High degree of training necessary.
Thermal Analysis	$ 6,000	90	pea size	$50	Training necessary. Not specific for asbestos.
ASBESTEST™	$ 125	5	pea size	$2.27	No training. Specific for asbestos.

ORDERING AND SHIPPING INFORMATION

The 56 Test EC110 **ASBESTEST™** Asbestos Detection Kit is complete with all materials and reagents. A small excess of each reagent is provided which should be discarded after the 55 tests have been performed. Due to transportation regulations, the kit is shipped in two parts. One part contains all of the items except the Iron Color Reagent which is shipped separately. The Iron Color Reagent is combined with the other items in the carrying box for use and storage. Useful life of reagents is one year or longer.

F.O.B. St. Petersburg, Florida **$125.00**

Availability: From Stock.

Shipping Mode: UPS Surface, U.S.A. & Canada. Air all other countries.

Payment Terms: Net 10 days

Shipping Charges: Prepaid and added to invoice for U.S.A. & Canada. Collect all other countries. Prepaid orders sent freight allowed U.S.A. & Canada.

Reagent Replacements: Order by Number, Mg-1, Fe-2, etc. ..... $12.00 ea.

Chemocelumn® Reaction Filter Tube Replacements: 55 Reaction Tubes with Caps and 6 Funnels
EC114 ..... $50.00

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2. Peters, G.A., and Peters, Barbara J., *Sourcebook on Asbestos Diseases: Medical, Legal and Engineering Aspects.* Garland STPM Press, New York, NY, 1980.
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5. Feigl, F., *Spot Tests in Inorganic Analysis*, 5th Ed., Translated by Cesper R.E., Elsevier Publishing Co., Amsterdam, pp 161-162, 225-227, 1958.
6. Furman, N.H., Ed., *Standard Methods of Chemical Analysis, Volume 1, The Element*, Sixth Edition, D. Van Nostrand Company, Inc., Princeton, NJ, pp 586-589, 606-609, 1968.

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