

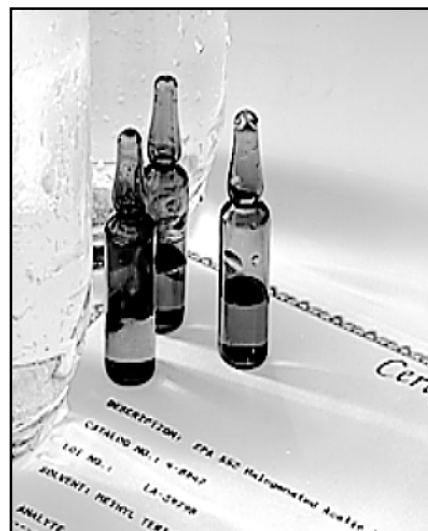
Reference Standards for ICR — Haloacetic Acids

Product Specification

Supelco manufactures chemical reference standards for the calibration of capillary gas chromatographs used in the determination of the byproducts of drinking water disinfection. These byproducts have the potential to produce adverse human health effects. The US EPA has promulgated three methods – 552, 552.1, and 552.2 – to monitor the levels of disinfection byproducts. Laboratories which support water systems needing to determine disinfection byproducts are required to use these methods.

Method 552 lists six haloacetic acids and two chlorinated phenols. Method 552.1 includes the same six haloacetic acids as well as dalapon (2,2-dichloropropanoic acid), but does not include chlorinated phenols. Method 552.2 lists 9 haloacetic acids and dalapon. All three methods specify capillary gas chromatography with electron capture detector. Methods 552 and 552.2 use liquid/liquid extraction, while Method 552.1 uses liquid/solid extraction. All three methods include derivatization of the haloacetic acids to their respective esters.

Supelco offers haloacetic acids, their respective esters and derivatizing reagents to allow the analyst to quantitatively calibrate his chromatograph with all of the compounds listed in the three methods. Each standard compound is lot controlled and its identity and purity have been verified. All balances used are evaluated before each lot is prepared, using NIST Class S traceable weights. Gravimetric processes are controlled within $\pm 0.5\%$. All volumetric glassware used is NIST Class A traceable. Analysis of the finished product is conducted using capillary GC with electron capture detector. Each reference standard is blanketed in nitrogen and sealed in an amber glass ampul.



994-0076

Haloacetic Acids Method 552

Calibration Standards

EPA 552 Halogenated Acetic Acids Mix

2000 $\mu\text{g}/\text{mL}$ each component in methyl tert-butyl ether.

Bromoacetic acid	Dibromoacetic acid
Bromochloroacetic acid	Dichloroacetic acid
Chloroacetic acid	Trichloroacetic acid

Description	Cat. No.
1mL	48047

EPA 552 Esters Calibration Mix

1000 $\mu\text{g}/\text{mL}$ each component in methyl tert-butyl ether.

Methyl bromoacetate	Methyl dibromoacetate
Methyl bromochloroacetate	Methyl dichloroacetate
Methyl chloroacetate	Methyl trichloroacetate

Description	Cat. No.
1mL	47598-U

Single Component Phenol Standards

5000 $\mu\text{g}/\text{mL}$ each in 1mL methanol.

Description	Cat. No.
2,4-Dichlorophenol	40029
2,4,6-Trichlorophenol	40019

Surrogate Standards

Single Component Standards

1000 $\mu\text{g}/\text{mL}$ each in 1mL methyl tert-butyl ether.

Description	Cat. No.
3,5-Dichlorobenzoic acid	502316
2,3-Dichloropropionic acid	47670-U
Methyl-2,3-dichloropropionate	47674-U

Internal Standard

Single Component Standard

Description	Cat. No.
1,2,3-Trichloropropane	
1000 $\mu\text{g}/\text{mL}$ in methyl tert-butyl ether	
1mL	47669-U

Haloacetic Acids and Dalapon Method 552.1

EPA 552.1 Acids Calibration Mix with Surrogate

Components at indicated concentrations in methyl tert-butyl ether. **8 components.**

Bromoacetic acid, 200 $\mu\text{g}/\text{mL}$
Bromochloroacetic acid, 200 $\mu\text{g}/\text{mL}$
2-Bromopropionic acid, 100 $\mu\text{g}/\text{mL}$ (surrogate)
Chloroacetic acid, 300 $\mu\text{g}/\text{mL}$
Dalapon, 200 $\mu\text{g}/\text{mL}$
Dibromoacetic acid, 100 $\mu\text{g}/\text{mL}$
Dichloroacetic acid, 300 $\mu\text{g}/\text{mL}$
Trichloroacetic acid, 100 $\mu\text{g}/\text{mL}$

Description	Cat. No.
1mL	47652-U

EPA 552.1 Esters Calibration Mix with Surrogate

Components at indicated concentrations in methyl tert-butyl ether. **8 components.**

Dalapon methyl ester, 200 $\mu\text{g}/\text{mL}$
Methyl bromoacetate, 200 $\mu\text{g}/\text{mL}$
Methyl bromochloroacetate, 200 $\mu\text{g}/\text{mL}$
Methyl chloroacetate, 300 $\mu\text{g}/\text{mL}$
Methyl dibromoacetate, 100 $\mu\text{g}/\text{mL}$
Methyl dichloroacetate, 300 $\mu\text{g}/\text{mL}$
Methyl-2-bromopropionate, 100 $\mu\text{g}/\text{mL}$ (surrogate)
Methyl trichloroacetate, 100 $\mu\text{g}/\text{mL}$

Description	Cat. No.
1mL	47653-U

Haloacetic Acids and Dalapon Method 552.2 Calibration Standards

EPA 552.2 Acids Calibration Mix ICR

With surrogate.

Components at indicated concentrations in methyl tert-butyl ether. **11 components.**

Description	Cat. No.
Bromoacetic acid, 200µg/mL	47629-U
Bromochloroacetic acid, 200µg/mL	
Bromodichloroacetic acid, 200µg/mL	
2-Bromopropionic acid, 100µg/mL (surrogate)	
Chloroacetic acid, 300µg/mL	
Chlorodibromoacetic acid, 200µg/mL	
Dalapon, 200µg/mL	
Dibromoacetic acid, 100µg/mL	
Dichloroacetic acid, 300µg/mL	
Tribromoacetic acid, 100µg/mL	
Trichloroacetic acid, 100µg/mL	

EPA 552.2 Esters Calibration Mix ICR

With surrogate.

Components at indicated concentrations in methyl tert-butyl ether. **11 components.**

Description	Cat. No.
Methyl bromoacetate, 200µg/mL	47630-U
Methyl bromochloroacetate, 200µg/mL	
Methyl bromodichloroacetate, 200µg/mL	
Methyl 2-bromopropionate, 100µg/mL (surrogate)	
Methyl chloroacetate, 300µg/mL	
Methyl chlorodibromoacetate, 200µg/mL	
Dalapon methyl ester, 200µg/mL	
Methyl dibromoacetate, 100µg/mL	
Methyl dichloroacetate, 300µg/mL	
Methyl tribromoacetate, 100µg/mL	
Methyl trichloroacetate, 100µg/mL	

Single Component Solutions

Each 1000µg/mL in 1mL methyl tert-butyl ether.

Acids		Esters	
Description	Cat. No.	Description	Cat. No.
Bromoacetic acid	47655-U	Methyl bromoacetate	47662-U
Bromochloroacetic acid	47659-U	Methyl bromochloroacetate	47666-U
Bromodichloroacetic acid	47278	Methyl bromodichloroacetate	47761
Chloroacetic acid	47654-U	Methyl chloroacetate	47661-U
Chlorodibromoacetic acid	47277	Methyl chlorodibromoacetate	47762
Dalapon	47656-U	Dalapon methyl ester	47663-U
Dibromoacetic acid	47660-U	Methyl dibromoacetate	47667-U
Dichloroacetic acid	47657-U	Methyl dichloroacetate	47664-U
Tribromoacetic acid	47729-U	Methyl tribromoacetate	47730-U
Trichloroacetic acid	47658-U	Methyl trichloroacetate	47665-U

Contact our Technical Service Department
(phone 800-359-3041 or 814-359-3041, FAX 814-359-5468)
for expert answers to your questions.

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EPA 552.2 Acids Calibration Mix

Without dalapon or surrogate.

Components at indicated concentrations in methyl tert-butyl ether. **9 components.**

Description	Cat. No.
Bromoacetic acid, 400µg/mL	47787
Bromochloroacetic acid, 400µg/mL	
Bromodichloroacetic acid, 400µg/mL	
Chloroacetic acid, 600µg/mL	
Chlorodibromoacetic acid, 1000µg/mL	
Dibromoacetic acid, 200µg/mL	
Dichloroacetic acid, 600µg/mL	
Tribromoacetic acid, 2000µg/mL	
Trichloroacetic acid, 200µg/mL	

EPA 552.2 Esters Calibration Mix

Without dalapon ester or surrogate.

Components at indicated concentrations in methyl tert-butyl ether. **9 components.**

Description	Cat. No.
Methyl bromoacetate, 400µg/mL	47788
Methyl bromochloroacetate, 400µg/mL	
Methyl bromodichloroacetate, 400µg/mL	
Methyl chloroacetate, 600µg/mL	
Methyl chlorodibromoacetate, 1000µg/mL	
Methyl dibromoacetate, 200µg/mL	
Methyl dichloroacetate, 600µg/mL	
Methyl tribromoacetate, 2000µg/mL	
Methyl trichloroacetate, 200µg/mL	

Internal Standard

Single Component Standard

Description	Cat. No.
1,2,3-Trichloropropane	47669-U
1000µg/mL in methyl tert-butyl ether	
1mL	

Surrogate Standards

Single Component Standards

Each 1000µg/mL in 1mL methyl tert-butyl ether.

Description	Cat. No.
Acids	
2-Bromopropionic acid	47645
2,3-Dibromopropionic acid	47789
Esters	
Methyl-2-bromopropionate	47668-U
Methyl-2,3-dibromopropionate	46970-U

Derivatization Products

Diazald Kit for Method 552

The Diazald Kit is a set of distillation glassware designed for the safe preparation of diazomethane (~100mmol). Glassware is without sharp edges on ground-glass joints. The Diazald Kit features \$19/22 Clear-Seal joints; these joints do not require grease even for vacuum applications, thus avoiding that source of contamination.

For replacement parts, contact our Technical Service department (phone 800-359-3041 or 814-359-3041).

Description	Cat. No.
Diazald Kit	Z10,0250

Methanolic Sulfuric Acid

Methylating reagent for Methods 552.1 and 552.2.

10% H₂SO₄ in methanol.

Description	Cat. No.
6 x 5mL	506516