



GEOLIQUIDS, INC.

A close-up photograph of laboratory glassware. In the foreground, a graduated cylinder is tilted, containing a bright yellow liquid. The background shows other glassware, including a beaker and another graduated cylinder, also containing yellow liquid. The lighting is bright, creating highlights on the glass surfaces.

HEAVY LIQUIDS

Product Catalog/Technical Guide

Letter from the President:



GeoLiquids is a family business founded in 1950 by my father, Jerome Swimmer. He was a leader in the gemological industry and earned an award from the American Chemical Society for the invention of the process for making Methylene Iodide.

My brother Glenn and I carry on the family business the way our father always did, by providing high quality products and outstanding customer service. We take great pride in the fact that many of our customers have been with us for over 50 years. We thank you for your ongoing business and for being part of our family.

GeoLiquids supplies heavy liquids worldwide to geologists, research laboratories, university geology departments, gemologists, and mining companies. Our products are available in any quantity starting as small as 1 lb. containers to provide all of our customers with quantities that suit their needs.

Our Chicagoland location facilitates easy and quick shipment to all of the United States, Canada, Mexico, and anywhere in the world. We hope this new catalog provides you with the information you need, but if you have any questions, we are always here to help. Please email or call.

Sincerely,

Mark Swimmer
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800-827-2411 (US and Canada)
847-215-0938 (International)

Chemical vs Water Based Products

Chemical based products used in sink/swim analyses work quickly and cleanly. However, they are toxic and require care in handling. At suggested densities water based products cause a slower separation time. At higher densities water based products will tend to get more viscous and separation will be slower as well. Water based products, however, have been extensively tested and proven to be non-toxic. Water based products are also reusable.

Product Storage

For best results please store all products in a cool, dark place. We ship in dark and clear bottles depending on the type of material ordered. Storing unused material in its original container and storing used material in similar containers will extend the life of the product.

In-stock Shipping

The online ordering system at www.geoliquids.com allows ordering 24/7, 365 days a year. Once an order is placed you will receive an order summary for your records. Due to the special shipping requirements of certain products, shipping costs are determined as part of order processing. You will receive a second correspondence providing total costs once the order is fully processed and ready to ship.

Online Ordering Convenience

Most products are in stock at all times at our Chicago area location.

PRODUCT LIST

CHEMICAL BASED PRODUCTS:

MI-GEE Brand Methylene iodide – Diiodomethane

Density 3.32 g/ml

Product catalog number MI001

Tariff classification no. 2827.60

BROMOFORM – Tribromomethane

Density 2.85 g/ml

Product catalog number BF002

Tariff classification no. 2903.69

ACETYLENE TETRABROMIDE – Tetrabromoethane

Density 2.96 g/ml

Product catalog number AT003

Tariff classification no. 2903.30

BENZYL BENZOATE

Density 1.120 g/ml

Product catalog number BB004

CAS no. 120-51-4

WATER BASED PRODUCTS:

POLY-GEE BRAND SODIUM POLYTUNGSTATE LIQUID (SP-LIQUID)

Density 2.9 g/cm³

Product catalog number SP005

Tariff classification no. 2841.80

POLY-GEE BRAND SODIUM POLYTUNGSTATE POWDER (SP- POWDER)

Density 2.9 g/cm³

Product catalog number SP006

Tariff classification no. 2841.80

SPT-O POLY-GEE BRAND SODIUM POLYTUNGSTATE LOW NITROGEN AND LOW CARBON POWDER

Density 2.89 g/cm³

Product catalog number SPT001

Tariff classification no. 2841.80

LST

Density 2.85 g/cm³

Product catalog number LST010

Tariff classification no. 2841.80.0040

TUNGSTEN CARBIDE (1 micron size)

Product catalog number TC008

Tariff classification no. 2849.90.3000

**For complete information see the material SDS sheets
at www.geoliquids.com**

Note: Chemicals on this list are laboratory items only for use by skilled people or under their supervision. Acceptance and use of these items so certifies.



CHEMICAL BASED PRODUCTS



CATALOG NO: **MI001**

MI-GEE Brand Methylene Iodide – Diiodomethane – LIQUID

Because of its high density, diiodomethane is used in the determination of the density of mineral and other solid samples. It can also be used as an optical contact liquid, in conjunction with the gemological refractometer, for determining the refractive index of certain gemstones.

PROPERTIES

Chemical formula	CH₂I₂
Molar mass	267.84 g/mol
Appearance	Colorless liquid
Density	3.32 g/ml
Melting point	5.4 to 6.2 °C; 41.6 to 43.1 °F
Boiling point	182.1 °C; 359.7 °F
Solubility in water	1.24 g/L (at 20 °C)

1 lb. container = 136 ml

5 lb. container = 680 ml

Tariff classification no. 2827.60



CATALOG NO: **BF002**

Bromoform – Tribromomethane – LIQUID

Bromoform is a brominated organic solvent, colorless liquid at room temperature, with a high refractive index, very high density, and sweet odor similar to that of chloroform. Its main use is as a laboratory reagent.

PROPERTIES

Chemical formula	CHBr₃
Molar mass	252.73 g/mol
Appearance	Colorless liquid
Density	2.85 g/ml
Melting point	-4 to 16 °C; 25 to 61°F
Boiling point	147 to 151°C; 296 to 304°F
Solubility in water	3.2 g/L (at 30 °C)

5 lb. container = 724 ml

Tariff classification no. 2903.69



CATALOG NO: **AT003**

Acetylene Tetrabromide – Tetrabromoethane – LIQUID

Acetylene Tetrabromide has an unusually high density for an organic compound. TBE is a liquid at room temperature, and is used to separate mineral ores from its supporting rock by means of preferential flotation.

PROPERTIES

Chemical formula	C₂H₂Br₄
Molar mass	345.65 g/mol
Appearance	Colorless liquid
Density	2.96 g/ml
Melting point	-1.0 °C; 30.3 °F
Boiling point	243.6 °C; 470.4 °F
Solubility in water	1.24 g/L (at 20 °C)

5 lb. container = 766 ml

Tariff classification no. 2903.30

CHEMICAL

CATALOG NO: **BB004**

Benzyl Benzoate – LIQUID

Benzoate liquid is used as a diluent for three of our products: MI-GEE Methylene Iodide, Bromoform and Acetylene Tetrabromide.

PROPERTIES

Chemical formula	$C_6H_5CH_2O_2CC_6H_5$
Molar mass	212.25 g/mol
Appearance	Colorless liquid
Density	1.12 g/ml
Melting point	18 °C; 64 °F
Boiling point	323 °C; 613 °F
Solubility in water	insoluble

CAS no. 120-51-4

1 qt. container = 946 ml

1 gal. container = 3.79 L

5 gal. container = 18.93 L



CATALOG NO: **GS001**

Gem Set – LIQUID

(Set contains 2 chemicals: 1@ 1.00 spg. and 1@ 3.32 spg.)

This 2 liquid set is intended for use by mineralogists and gemologists who need organic chemicals in small quantities to change the density of their gem sets that they have on hand. Sets are sold with a liquid at 1.00 spg and 3.32 spg. 2 chemical set of MI-GEE Brand Methylene Iodide, approx. 8 oz. and Benzyl Benzoate approx. 8 oz.

PROPERTIES

Appearance Colorless liquids

Tariff classification no. 2827.60 - MI-GEE
CAS no. 120-51-4 - Benzyl Benzoate

Methylene Iodide,
approx. 8 oz.

Benzyl Benzoate
approx. 8 oz.



NOTE: CHEMICALS IN THIS CATALOG ARE LABORATORY ITEMS ONLY FOR USE BY SKILLED PEOPLE OR UNDER THEIR DIRECT SUPERVISION. ACCEPTANCE AND USE OF THESE ITEMS SO CERTIFIES.

WATER BASED PRODUCTS



CATALOG NO: **SP005**

POLY-GEE Brand Sodium Polytungstate – LIQUID

Due to its very high solubility in water (max. density 3.1 g/cm³) SPT is widely used as a heavy liquid for gravity separation (sink/swim analysis) and density gradient centrifugation. Aqueous SPT is non-toxic, non-flammable, odorless, reusable and additionally, it has a low viscosity.

PROPERTIES

Chemical formula	$\text{Na}_6[\text{H}_2\text{W}_{12}\text{O}_{40}]$ or $3\text{Na}_2\text{WO}_4 \cdot 9\text{WO}_3 \cdot \text{H}_2\text{O}$
Molar mass	2986.12 g/mol
Appearance	Light yellow solution
Density	2.9 g/cm ³

1 lb. container = 161 ml

5 lb. container = 805 ml

Tariff classification no. 2841.80



CATALOG NO: **SP006**

POLY-GEE Brand Sodium Polytungstate – POWDER

Sodium Polytungstate powder is a granular product that is combined with distilled water to become a liquid. It is typically used in the field for sink/swim analysis. It is non-toxic, reusable, non-flammable, odorless, and has low viscosity.

PROPERTIES

Chemical formula	$\text{Na}_6[\text{H}_2\text{W}_{12}\text{O}_{40}]$ or $3\text{Na}_2\text{WO}_4 \cdot 9\text{WO}_3 \cdot \text{H}_2\text{O}$
Molar mass	2986.12 g/mol
Appearance	White crystals
Density	2.9 g/cm ³

1 lb. container = 0.45 kg

5 lb. container = 2.27 kg

Tariff classification no. 2841.80



CATALOG NO: **SPT001** (LOW NITROGEN and LOW CARBON)

SPT-O POLY-GEE Brand Sodium Polytungstate – POWDER

This is a granular product that is combined with distilled water to become a liquid. It is specifically developed for chemists that need a WATER BASED liquid that has LOW NITROGEN (N) and LOW CARBON (C) properties. This product is needed in aspects of soil science and studies.

PROPERTIES

Chemical formula	$\text{Na}_6[\text{H}_2\text{W}_{12}\text{O}_{40}]$ or $3\text{Na}_2\text{WO}_4 \cdot 9\text{WO}_3 \cdot \text{H}_2\text{O}$
Molar mass	2986.12 g/mol
Appearance	White crystals
Density	2.89 g/cm ³

1 lb. container = 0.45 kg

5 lb. container = 2.27 kg

Tariff classification no. 2841.80

NOTE: Distilled water (very pure) should be used to dilute our water based products. If you have questions regarding distilled water use we can offer you technical support. See mixing instructions for our powder products on page 5. Phone us at 847-215-9821 or 800-827-2411 and we can answer any questions and send technical information.

CATALOG NO: **LST010**

LST – LIQUID

LST heavy liquid is an aqueous solution of low toxicity which enables rapid and effective mineral separation. LST has low viscosity and high thermal stability. With LST heavy liquid you can achieve 99% recovery of the material. Used by mining and research labs world wide.

PROPERTIES

Appearance Light yellow solution
Density 2.85 g/cm³

Tariff classification no. 2841.80.0040

1 lb. container = 159 ml

5 lb. container = 795 ml



CATALOG NO: **TC008**

Tungsten Carbide – POWDER (1 Micron Size)

ADDITIVE FOR SODIUM POLYTUNGSTATE TO MAKE IT HEAVIER. Tungsten Carbide will float in the water-based products, not dissolve.

PROPERTIES

Chemical formula WC
Molar mass 195.85 g/mol
Appearance Fine black powder
Solubility in water insoluble

Tariff classification no. 2849.90.3000

1 lb. container = 0.45 kg



SODIUM POLYTUNGSTATE (SPT) MIXING TABLE FOR CALCULATING SPECIFIC DENSITY

DENSITY (G/ML)	GRAMS OF SPT	GRAMS OF DISTILLED WATER	DENSITY (G/ML)	GRAMS OF SPT	GRAMS OF DISTILLED WATER
2.25	700	300	2.65	797	203
2.3	723	277	2.7	805	195
2.35	740	260	2.75	815	185
2.4	752	248	2.8	820	180
2.45	763	237	2.85	827	173
2.5	772	228	2.9	835	165
2.55	782	218	2.95	840	160
2.6	790	210	3.0	850	150

NOTE:

Only use distilled water
 Only use glassware or plastic
DO NOT use any kind of metal

Only add SPT to water,
DO NOT add water to SPT

These measurements supply SPT solution for approximately 100 samples when using 2.5 - 3.0 ml per sample processed.

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EQUIPMENT



CATALOG NO: **H011**

Hydrometer: 12" Length, Density Range 2.0 to 3.0

Used to test for specific gravity of heavy liquids at 60/600 F.
When ordering please specify product code.

Divisions: .010

Length of tube: 12 inches

Product code: HYD2



CATALOG NO: **H012**

Hydrometer: 12" Length, Density Range 3.0 to 4.0

Used to test for specific gravity of heavy liquids at 60/600 F.
When ordering please specify product code.

Divisions: .005

Length of tube: 12 inches

Product code: HYD3



CATALOG NO: **DB15**

Density Bead Set

This glass bead set is sold as an 11 bead set, individual beads are not sold separately. These are glass beads and are not effected by the exposure to chemicals. For this reason they are long lasting. (Set goes from 1.80 to 2.86 grams per ML.)

Density ranges are as follows:

1.80 GM/ML Yellow	2.41 GM/ML Gray/Clear
1.90 GM/ML Brown	2.50 GM/ML Blue
2.00 GM/ML Green	2.56 GM/ML Red
2.22 GM/ML Clear	2.69 GM/ML Clear/Black
2.27 GM/ML Gold	2.86 GM/ML Black
2.35 GM/ML Gray	

USING HEAVY LIQUID

SAFETY PRECAUTIONS – CHEMICAL BASED PRODUCTS

DO SAFETY

Wear safety glasses.
Wear rubber gloves if skin contact is possible.
Have clean water on tap to wash any spilled chemicals off skin.
Wash your hands after using heavy liquids.
Use with good air ventilation under a fume hood.
Observe good laboratory practice and normal precautions.

HEAVY LIQUID SEPARATIONS

Use only plastic or glass containers and implements.
Use only benzyl benzoate to adjust the density of heavy liquid.
Use only benzyl benzoate to wash minerals after separation.
Check the density of your heavy liquids before using.
Clean or deslime minerals before separation with Methylene Iodide, Bromoform or Acetylene Tetrabromide heavy liquid.
You can recycle/reclaim chemical based heavy liquids.
Contact a disposal service, do not pour down the drain.

DO NOT SAFETY

Do not ingest heavy liquids.
Do not smoke or eat where heavy liquids are used.
Do not allow any heavy liquids to contact eyes.
Do not allow regular skin contact with heavy liquids.
Do not continue to wear clothing contaminated with heavy liquids.

HEAVY LIQUID SEPARATIONS

Do not use metal containers, spatulas or other metal implements.
Do not allow heavy liquid to come in contact with alkaline materials.
Do not use wet mineral samples, or samples with a high slime content.
Do not allow heavy liquids to evaporate, unless the density is rechecked.
Do not discard heavy liquids into the environment.

SAFETY PRECAUTIONS – WATER BASED PRODUCTS

DO SAFETY

Wear safety glasses.
Wear rubber gloves if skin contact is possible.
Have clean water on tap to wash any spilled SPT/LST off skin.
Wash your hands after using SPT/LST heavy liquid.
Observe good laboratory practice and normal precautions.

HEAVY LIQUID SEPARATIONS

Use only plastic or glass containers and implements.
Use only deionized or distilled water to adjust SPT/LST heavy liquid.
Use only deionized or distilled water to wash minerals after separation.
Check the density of SPT/LST heavy liquid before using.
Clean or deslime minerals before separation with SPT/LST heavy liquid.
Keep laboratory temperatures above 20° C to prevent SPT/LST crystallization.
Recycle SPT/LST heavy liquid.

DO NOT SAFETY

Do not ingest SPT/LST heavy liquid.
Do not smoke or eat where SPT/LST heavy liquid is used.
Do not allow any SPT/LST heavy liquid to contact eyes.
Do not allow regular skin contact with SPT/LST heavy liquid.
Do not continue to wear clothing contaminated with SPT/LST heavy liquid.

HEAVY LIQUID SEPARATIONS

Do not use metal containers, spatulas or other metal implements.
Do not use saline or contaminated water to prepare SPT/LST heavy liquid.
Do not use saline or contaminated water for washing mineral samples.
Do not mix SPT/LST heavy liquid with other chemicals or different heavy liquids.
Do not allow SPT/LST heavy liquid to come into contact with alkaline materials.
Do not use wet mineral samples, or samples with a high slime content.
Do not allow SPT/LST heavy liquid to evaporate, unless the density is rechecked.
Do not chill SPT/LST heavy liquid below 20° C. This may cause crystallization.
Do not discard SPT/LST heavy liquids into the environment.

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FAQs

Q: What are the best ways to assess when to recycle water based solutions, and how should they be recycled?

A: Heat the solution to evaporate excess water. Filter the solution to remove excess minerals. Add distilled water to change density.

Q: In working with SP Liquid I used the filters suggested in the SDS sheets but the dried product now looks slightly darker. Is this discoloration normal?

A: Liquefied powder material should be kept in liquid form and not allowed to dry out. Over time and use it will discolor and change density. A small amount of hydrogen peroxide may return the product to its original color.

Q: I bought Sodium Polytungstate Liquid a while ago and the density is a bit lighter than it should be. How can I return the product to proper density?

A: Some density fluctuation may occur during storage, even in a controlled environment. Heating the solution slightly will evaporate excess water and return the solution to the proper density. You may consider using Sodium Polytungstate Powder in the future and mixing the solution as needed.

Q: Does the Sodium Polytungstate information pertain to SPT-0?

A: All data from SP products is valid for SPT-0.

Q: Is there any harm to putting this product in an ultrasonic bath?

A: No harmful effects have been reported provided this is done under a ventilation hood and normal safety measures are practiced.

Q: What is the safest way to handle this product while working with it?

A: These products are hazardous and should be used under a ventilation hood. Appropriate mask and gloves should be worn and exposure to skin limited.

Q: How do I decide which product is right for me, Chemical Based or Water Based?

A: The right product is based on personal choice. Chemical products are faster yet toxic. Water based products are non-toxic but are slower. Water based products can also be reused.

Q: What is the proper way to recycle chemical based products?

A: Wash samples and all glassware by dissolving the remaining product in pure acetone. This acetone-product mixture is then stored in containers. Recycle the product by adding water and separating the dissolved liquids.

Q: Is it common for the product to darken in color? Is there a way to make it colorless again?

A: It is common for the material to darken over time. A drop or two of hydrogen peroxide may help return the product to its original color.

Q: How can I ask a specific product question?

A: Please contact with specific product questions at 1-800-827-2411 (US and Canada) or +1-847-215-0938 (International) or fill out the easy-to-use inquiry form at www.geoliquids.com.

CHEMICAL BASED PRODUCTS GEOLIQUIDS – BULLETIN NO. 45

Constant Center Differential Gravity Apparatus Using GEOLIQUIDS Chemical Based Products

The Constant Center Differential Gravity Tube Apparatus is used for very rapid routine repetitive mineral density determinations. Oil Well Loggers do this in their Shale density determinations on the constant look out for shale porosity and open determinations. The method and apparatus is applicable to many other routine density determinations.

A Differential Gravity tube is set up in our apparatus according to the method described in our Bulletin No. 40. With this apparatus, the user may keep his working gravity area in the same place relative to constant scale markings outside the tube. In this manner any porous shale or other off density mineral under routine examination is immediately spotted. The CCDGTA may be used with any non-aqueous heavy liquid shown on our price list plus our BENZYL BENZOATE, Sp. G. 1.120 as the Light Liquid. Oil Well Loggers use BROMOFORM Sp. G. 2.85 as the best all around heavy liquid for their work.



50 ml. mark and add more BENZYL BENZOATE to the zero mark or above into the burette. Generate your differential gravity zone within the burette according to Bulletin No. 40. After a proper gradient is established, put in your 11 bead density set. Put in several Shales (or minerals) of known porosity or density and check their density from the tube. As you get to working with your Shales (or minerals) you will get to know the best minimum and maximum densities for your own work and mark lines on the glazed paper attached to the burette according to your own needs. Green and Red limiting marks at either end of the areas are good reminders in routine work.

Each day or any other convenient time, the glass standard at 2.48 can be lined up at the 50 ml. mark and the locations of the High and Low Shale samples may be noted if they have changed appreciably from your previous settings. When the tube gets very many Shale (or mineral) samples in it, they may be flushed out through the top of the burette by tilting it over a beaker or can and raising the BROMOFORM leveler to flush the samples out. Replace the burette and leveling bulb on the stand, add BENZYL BENZOATE into the top of the burette as before and generate a new differential gravity tube. Recover your standards and marker Shales (or minerals) and put them back into the new tube. Each tube generation lasts about a month in routine work.

General Concept:

Assemble the apparatus according to the picture. Set leveling bulb, shown at the right, opposite the 25 ml. mark on the burette and add BROMOFORM thru the bulb until it is up to the 25 ml. mark.

Then add BENZYL BENZOATE thru the top of the burette until the burette is full. Now lower the leveling bulb so that the liquid, liquid interface is opposite the

NOTE: Additional bulletins and technical information can be found on our web site www.geoliquids.com.



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