PerkinElmer
Scintillation Cocktails & Consumables

For every liquid scintillation counting application

PerkinElmer®
precisely.

Total solutions for liquid scintillation counting applications — from PerkinElmer

Address any liquid scintillation counting need with PerkinElmer's liquid scintillation cocktails, tissue solubilizers and specialty chemicals. You can be confident that our products meet the highest standards of performance, user safety, environmental safety, and user convenience. Plus, our portfolio of application notes can assist you with even the most complex liquid scintillation counting applications you perform in your research.

Combine our scintillation cocktails with our trusted NEN® Radiochemicals, high quality counting vials and market-leading radiometric detection instrumentation for a complete single-source solution for your radiometric application needs.

Plus, no matter where your lab is, our global distribution network will ensure that the products you order reach you reliably and on time. You just won't find a better source of products and services to support your research than PerkinElmer.

Contents

Scintillation Cocktail Comparison

The table below provides information to help you choose the correct cocktail. This depends on the nature of the sample to be counted as well as the sample preparation procedure and instrument used. Only the right cocktail choice, paired with a correct sample preparation procedure and instrument, will result in accurate and reproducible counting results.

	Cocktail	Type of Solvent	Flashpoint °C/Tag CC	Counting Efficiency, %[1] No Sample	With 10% Water	With 10% Solubilizer
COCKTAILS FOR AQUEOUS SAMPLES	Ultima Gold	DIPN	~150	56	52	49[3]
	Ultima Gold XR	DIPN	~150	50	46	N.A.
	Ultima Gold LLT	DIPN	~140	52	46	N.A.
	Ultima Gold MV	DIPN	~110	57	55	N.A.
	Ultima Gold AB	DIPN	~140	52	46	N.A.
	HiSafe 2	DIPN	~150	56	52	49[3]
	HiSafe 3	DIPN	~150	50	46	N.A.
	Opti-Fluor	Linear Alkylbenzyne	~150	44	40	N.A.
	Emulsifier-Safe	Linear Alkylbenzyne	~150	43	39	N.A.
	Insta-Gel Plus	Pseudocumene	48–50	56	48	N.A.
	Pico-Fluor 15	Pseudocumene	48–50	57	53	N.A.
	Pico-Fluor 40	Pseudocumene	48–50	51	45	N.A.
	Filter-Count	Pseudocumene	48–50	57	53	N.A.
	Hionic-Fluor	Pseudocumene	48–50	51	45	48
ORGANIC SAMPLES	Ultima Gold F	DIPN	~150	65	N.A.	N.A.
	BetaPlate Scint	DIPN	~150	65	N.A.	N.A.
	Opti-Fluor O	Linear Alkylbenzyne	~150	59	N.A.	N.A.
	Insta-Fluor Plus	Pseudocumene	48–50	65	N.A.	57

[1] Typical counting efficiencies determined on a PerkinElmer Tri-Carb 3100TR/LL (preset ^{3}H region, 0–18.6 keV).

[2] Typical maximum sample volume (mL) per 10 mL cocktail at 20 ºC.

[3] Ultima Gold with tissue solubilizers, preferably counted within 24 hours.

PerkinElmer has a large collection of Application Notes that can help you with sample preparation. Please visit our website (www.perkinelmer.com/cocktails) or contact Technical Support for assistance.

	Sample Load Capacity, mL[2]				
Water	**0–0.05 M**	**0.05–0.2 M**	**0.2–0.5 M**	**0.5–1.0 M**	**Over 1.0 M**
3.2	3.0–6.0	3.0–5.0	2.0–4.0	1.0–4.0	0–3.0
10.0	8.0–10.0	8.0–10.0	5.0–8.0	3.0–7.0	0–5.0
12.0	Optimized for all water types.				
1.0	1.0–3.0	2.0–4.0	2.0–4.0	0–2.0	*
10.0	Optimized for 1–2 M mineral acids.				
3.2	3.0–6.0	3.0–5.0	2.0–4.0	1.0–4.0	0–3.0
10.0	8.0–10.0	8.0–10.0	5.0–8.0	3.0–7.0	0–5.0
1.5	1.5–2.5	1.5–2.5	0.5–1.0	*	-
1.5	1.5	1.5	1.0–1.5	0.5–1.0	-
1.8 and 3–10	1.8 and 3–10	1.8 and 3–10	0.5–1.0 and 3–10	0.5–1.5	0.1–1.5
1.5	1.5–2.0	1.5–2.5	0.5–1.0	-	-
3.0	1.5–2.0	5.0–10.0	2.0–2.4	1.0–2.0	0.5–1.0
1.0	*	*	*	*	*
1.0	*	*	1.0–1.5	1.5–2.5	1.5–4.0

For organic samples and dried filter membranes only.

For organic samples only.

* = limited capacity - = no capacity

Safer LSC Cocktails

Occupational safety in laboratories is of unquestioned importance. Traditional scintillation cocktail formulations contain flammable, toxic solvents that permeate through polyethylene and may represent a hazard to laboratory workers, create disposal problems that place strains on the environment, and often add hidden lab costs. PerkinElmer has addressed this problem by offering several lines of safer LSC cocktails.

Ultima Gold Family

Beginning in the early 1980's, user and environmental safety concerns led to the introduction of cocktails based on high flash point solvents. Research conducted by Packard BioSciences Corp., later acquired by PerkinElmer, led to the development of the Ultima Gold™ family, high performance cocktails with the following properties:

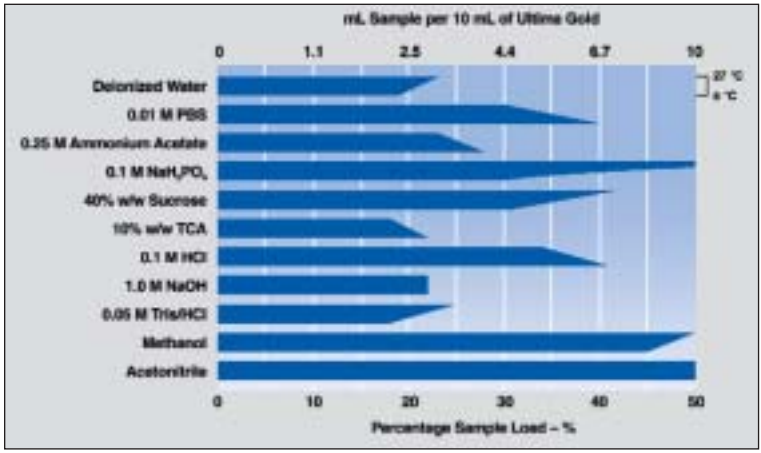
- Very high flash point for simple transportation and no special storage requirements
- Very low vapor pressure; nonvolatile
- Low toxicity
- Biodegradable
- "Harmless chemicals" classification; nonflammable
- High counting efficiency
- High quench resistance

Ultima Gold

Ultima Gold is a safer liquid scintillation cocktail for a wide range of aqueous and non-aqueous samples. This multipurpose LSC cocktail has a high counting efficiency and provides superior detection efficiency for samples that exhibit severe quench in conventional cocktails.

- Extremely high counting efficiency: up to 56% for ^{3}H
- Universal cocktail for aqueous and nonaqueous samples
- High quench resistance
- No diffusion through polyethylene vials
- Biodegradable
- High flashpoint of approximately 150 °C
- Safely used outside a fume hood

Typical sample load capacity of Ultima Gold with various sample types



Typical ^3H counting efficiency of Ultima Gold

0.15 M NaCl added to 10 mL Cocktail	0 mL	1 mL	2 mL
Ultima Gold	56%	52%	49%
Alkylbenzene-based LSC cocktails	44%	40%	38%

Tri-Carb 2250TR/LL with 67% absolute ^3H efficiency (sealed argon purged standard).

Ultima Gold AB

Specifically designed for alpha/beta discrimination in liquid scintillation counting, Ultima Gold AB provides the slow pulse decay characteristics necessary for effective alpha/beta discrimination. An excellent sample holding capacity makes it ideal for a variety of aqueous and acidic sample types.

Typical sample uptake and misclassification range of Ultima Gold AB at 20 °C

Type of Sample	Ultima Gold AB	85% (v/v) UG AB + 15% (v/v) UG F	75% (v/v) UG AB + 25% UG F	50% (v/v) UG AB + 50% UG F
Water				
Sample uptake range	0.2–10.0 mL	0.2–10.0 mL	0.2–2.25 mL	0.2–0.5 mL
Misclassification range	0.74–1.87%	0.70–1.74%	0.58–0.68%	0.42–0.47%
1 M HCl				
Sample uptake range	0.2–5.5 mL	0.2–2.0 mL	0.2–1.25 mL	0.2–0.4 mL
Misclassification range	0.87–1.73%	0.64–0.79%	0.64–0.75%	0.43–0.52%
2 M HCl				
Sample uptake range	0.2–2.25 mL	0.2–1.25 mL	0.2–1.0 mL	0.2–0.3 mL
Misclassification range	0.61–1.07%	0.56–0.76%	0.49–0.60%	0.38–0.49%
1 M HNO_3				
Sample uptake range	0.2–3.25 mL	0.2–1.75 mL	0.2–1.25 mL	0.2–0.4 mL
Misclassification range	0.75–3.85%	0.66–1.51%	0.55–0.98%	0.48–0.53%
2 M HNO_3				
Sample uptake range	0.2–2.25 mL	0.2–1.5 mL	0.2–1.0 mL	0.2–0.3 mL
Misclassification range	0.77–4.21%	0.60–1.91%	0.70–1.17%	0.54–0.62%

Typical percentage misclassifications using a Tri-Carb 2550TR/AB and Time-Resolved Pulse Decay Analysis. Sample uptake per 10 mL cocktail at 20 °C. For dilute samples or smaller sample volumes, dilute Ultima Gold AB with Ultima Gold F to increase energy resolution and counting efficiency, and further reduce misclassification of alphas as beta and betas as alpha.

Ultima Gold F

Ultima Gold F is a high efficiency cocktail for counting dry filter supports, as well as non-aqueous (organic) samples. For alpha/beta LSC counting, Ultima Gold F is an ideal diluent for Ultima Gold AB, increasing energy pulse-shape resolution for small volume samples.

Typical ^3H quench resistance of Ultima Gold F

CCl_4 added to 10 mL Cocktail	0 µL	10 µL	20 µL	30 µL	40 µL	50 µL
Tritium Counting Efficiency	63%	51%	45%	39%	34%	31%

Tri-Carb 2250TR/LL with 67% absolute ^3H efficiency (sealed argon purged standard).

Typical ^{3}H counting efficiency of dried filters

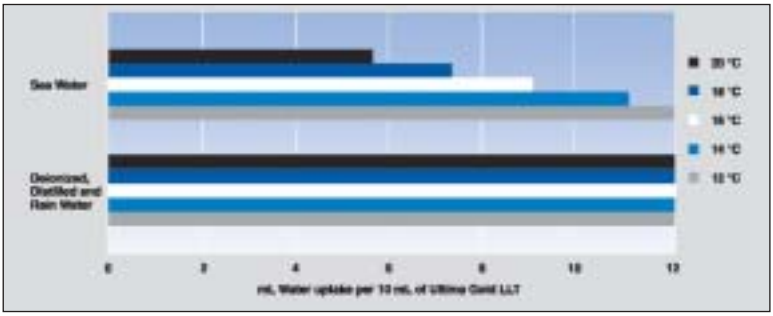
Filter Type	Counting Efficiency
Glass Fiber GF/C	38% (^{3}H-Thymidine)
Glass Fiber GF/B	36% (^{3}H-Thymidine)

Tri-Carb 2250TR/LL with 67% absolute ^{3}H efficiency (sealed argon purged standard).

Ultima Gold LLT

Determine low levels of ^{3}H in a wide range of water samples without requiring distillation. It accepts up to 54% tap water, river water, rain water, and even sea water, with ^{3}H counting efficiencies of approximately 30% and with very low background levels. When used with PerkinElmer's Tri-Carb® Liquid Scintillation Analyzers or the QUANTULUS® Ultra Low Level Liquid Scintillation Spectrometer, minimum detectable activities are less than 1.1 Bq/L (500 minute count time).

Performance of Ultima Gold LLT with various types of water



Performance of Ultima Gold LLT for low level ^{3}H

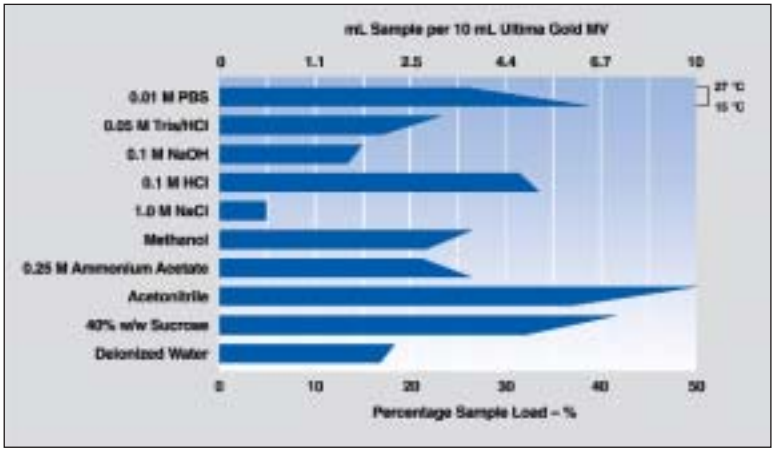
		Optimized Window (0.4 – 4.5 keV)				
Water to Cocktail Ratio	Cocktail	%^{3}H	Bkg. Eff.	E^2/B	E^2V^2/B	MDA (Bq/L^{-1})
8 mL:12 mL	Ultima Gold LLT	24.6%	1.15 CPM	526	33680	1.22
10 mL:10 mL	Ultima Gold LLT	21.2%	1.11 CPM	405	40490	1.11
11 mL:9 mL	Ultima Gold LLT	18.1%	0.95 CPM	345	41730	1.06

Count Conditions: Tri-Carb 2770TR/SL operated at 15 °C, in Low Level Count Mode, all samples in duplicate, 500 minute count time.

Ultima Gold MV

Ultima Gold MV is specifically formulated for the rapid uptake of aqueous and non-aqueous samples. It is recommended for counting wet or damp glass fiber filters from cell harvesters. It is also ideal for counting small volume samples in miniature vials and microtubes because of its reduced viscosity compared to other high flash point cocktails.

Typical sample load capacity of Ultima Gold MV with various sample types



Typical microvolume ^{3}H counting efficiency of Ultima Gold MV

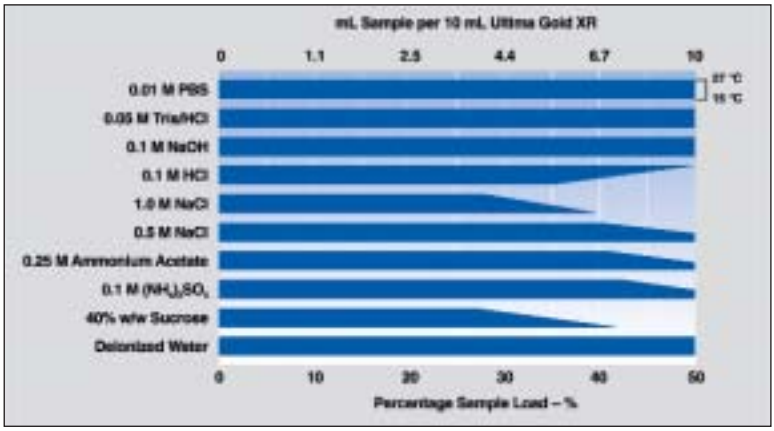
0.15 M NaCl added to 1,000 µL Cocktail	0 µL	50 µL	100 µL	150 µL	200 µL
Tritium counting efficiency	57%	55%	54%	53%	52%

Tri-Carb 2250TR/LL with 67% absolute ^{3}H efficiency (sealed argon purged standard).

Ultima Gold XR

Ultima Gold XR is a safer liquid scintillation cocktail with a very high sample load capacity. Choose it to count large sample volumes, or when using miniature vials to increase throughput, reduce cost per sample or minimize radioactive waste. Ultima Gold XR is compatible with alkaline samples.

Typical sample load capacity of Ultima Gold XR



Typical ^{3}H quench resistance of Ultima Gold XR

Water added to 10 mL Cocktail	0 mL	1 mL	2 mL	5 mL	10 mL
Tritium counting efficiency	50%	46%	43%	37%	29%

Tri-Carb 2250TR/LL with 67% absolute ^{3}H efficiency (sealed argon-purged standard).

Product	Product No.	Size
Ultima Gold	6013326	1 x 5 L
	6013327	4 x 2.5 L
	6013329	2 x 5 L
	6013322	1 x 25 L
Ultima Gold AB	6013301	1 x 1 L
	6013309	2 x 5 L
Ultima Gold F	6013179	2 x 5 L
Ultima Gold LLT	6013371	1 x 1 L
	6013377	4 x 2.5 L
Ultima Gold MV	6013151	1 x 1 L
	6013159	2 x 5 L
Ultima Gold XR	6013117	4 x 2.5 L
	6013119	2 x 5 L
	6013112	1 x 25 L

Sample sizes of all products in table above are available. To order a sample, please contact your PerkinElmer Sales Representative.

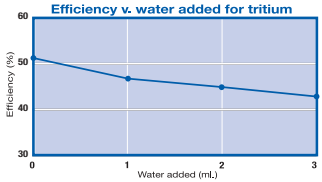
OptiPhase HiSafe Family

A major technological advance in safer LSC cocktails, our OptiPhase HiSafe family of safer LSC cocktails uses the solvent di-isopropylnaphthalene (DIN) to achieve improved safety without decreasing performance.

- High flashpoint (148 °C)
- Low vapor pressure (1 mm Hg at 25 °C)
- Virtually odorless and colorless
- Low toxicity and irritancy (LD_{50} 5,600 mg/kg)
- No permeation through plastic vials
- Low photo- and chemiluminescence
- High ^{3}H counting efficiency
- Good color and quench resistance
- No adverse toxicological effects

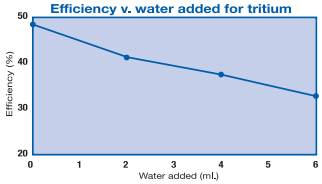
OptiPhase HiSafe 2

OptiPhase HiSafe 2 is a general-purpose liquid scintillation cocktail. It combines very high counting efficiency with moderate to high sample holding capacity for a wide range of aqueous and non-aqueous solutes.



OptiPhase HiSafe 3

OptiPhase HiSafe 3 is a liquid scintillator that handles a broad range of solutes. Used for a variety of scintillation applications, it combines good counting efficiency with a very high level of sample acceptance, particularly for high ionic strength solutes.



OptiPhase SuperMix

OptiPhase SuperMix has been specially formulated for use with microplates. It mixes easily with a wide variety of aqueous solutes and has a very high uptake capacity, minimizing cocktail use and reducing disposal problems.

OptiScint HiSafe

OptiScint HiSafe is an environmentally safe DIN-based scintillation cocktail with high counting effiency, suitable for all non-aqueaus samples.

Betaplate Scint

Betaplate Scint is a HiSafe cocktail for samples harvested or spotted onto dry filter membranes. High counting efficiency may eliminate sample pre-treatment often necessary with conventional cocktails. Ideal for use with samples in organic solutions.

Product	Product No.	Size
OptiPhase HiSafe 2	1200-436	1 x 5 L
OptiPhase HiSafe 3	1200-437	1 x 5 L
OptiPhase SuperMix	1200-439	1 x 5 L
Betaplate Scint	1205-440	1 x 5 L
OptiScint HiSafe	1200-434	1 x 5 L

Opti-Fluor Family

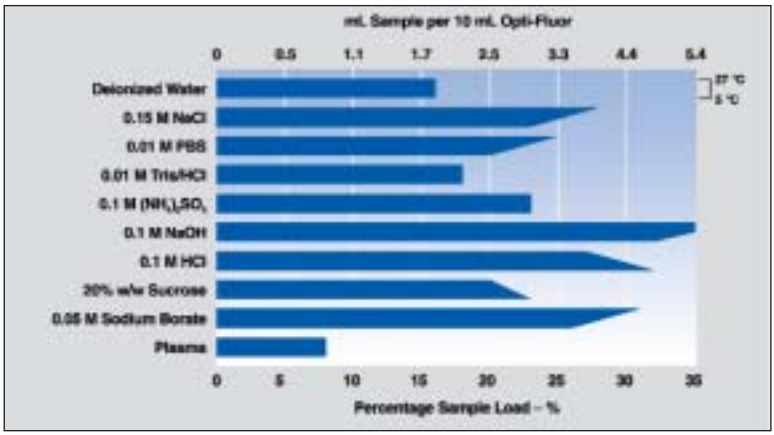
Our Opti-Fluor® cocktails are universal, safer liquid scintillation cocktails designed for use with polyethylene vials.

- Multipurpose liquid scintillation cocktail
- Low photo- and chemiluminescence
- No diffusion through polyethylene vials
- Biodegradable
- Low toxicity, increasing occupational safety
- High flashpoint of approximately 150 °C

Opti-Fluor

Based on the high flash point solvent LAB (linear alkyl benzene), Opti-Fluor does not show any diffusion through the walls of polyethylene vials (observed with many LSC cocktails containing toluene, xylene or pseudocumene).

Typical sample load capacity of Opti-Fluor with various sample types



Opti-Fluor O

Opti-Fluor O is used for counting organic (non-aqueous) samples. It will accommodate many organic solvents, forming clear liquid solutions yielding good counting efficiencies.

Opti-Fluor O can replace classical toluene-, xylene- or pseudocumene-based LSC cocktails for organic samples. Opti-Fluor O is ideally suited for counting radon in water when a safer cocktail is preferred.

Compatibility of Opti-Fluor O with different solvents

Sample type	Compatibility	Sample type	Compatibility
Acetic Acid	Yes*	Ethanol–96%	No
Acetone	Yes	Ethanol–100%	Yes
Acetonitrile	No	Ethyl Acetate	Yes
Chloroform	Yes	Ethylene Glycol	No
Dichloromethane	Yes	Heptane	Yes
Dimethyl Sulfoxide	No	Methanol	No

**Maximum capacity approximately 4% sample load; for all other sample types up to 50% capacity is recommended.*

Product	Product No.	Size
Opti-Fluor	6013199	2 x 5 L
Opti-Fluor O	6013339	2 x 5 L

Sample sizes of all products in table above are available. To order a sample, please contact your PerkinElmer Sales Representative.

Other Safer LSC Cocktails

Emulsifier-Safe

Emulsifier-Safe™ is a LAB-based cocktail that is economically priced for aqueous and organic samples. Aqueous samples and many buffer solutions are accepted in a single liquid phase up to a 10 to 15% sample load.

Formula-989

Formula-989® is a high flash point, nonflammable LAB-based cocktail that is designed for benchtop use. Formula-989 can accept a variety of aqueous samples up to 20 to 30%, by volume, as stable homogeneous mixtures.

High Efficiency Mineral Oil Scintillator

High Efficiency Mineral Oil Scintillator is the cocktail of choice for the detection of radon in water and soil samples. It yields a high counting efficiency and provides the same accuracy as solid detectors for radon. It has a low volatility and a high flash point (79 °C/175 °F).

Product	Product No.	Size
Emulsifier-Safe	6013389	2 x 5 L
Formula-989	6NE9899	2 x 5 L
High Efficiency Mineral Oil Scintillator	6NE9571	1 x 1 L
	6NE9579	4 x 2.5 L

PerkinElmer offers classical liquid scintillation cocktail formulations that are optimized for the highest counting efficiency and maximum sample holding capacity. Our prepared cocktails are easy-to-use, save preparation time and minimize laboratory errors. Our carefully controlled blending and quality assurance procedures provide high performance, batch homogeneity and lot-to-lot uniformity.

Emulsifying Cocktails

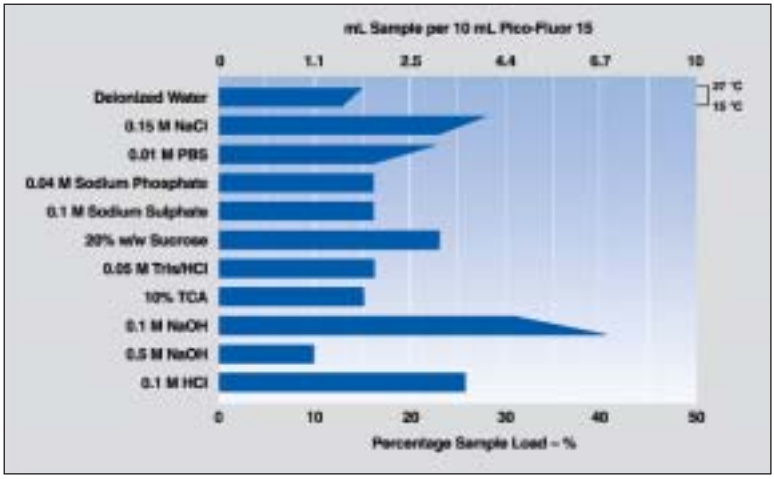
Pico-Fluor Family

The Pico-Fluor™ family is a range of pseudocumene-based liquid scintillation counting cocktails.

Pico-Fluor 15

Pico-Fluor 15 is specifically formulated to provide accurate and reproducible high efficiency counting of aqueous samples. It will accept up to 2 mL of a wide variety of aqueous samples in 10 mL of cocktail. The continuous single liquid phase, formed from zero to the maximum acceptable sample load, avoids unexpected two-phase separation.

Typical sample load capacity of Pico-Fluor 15 with various sample types



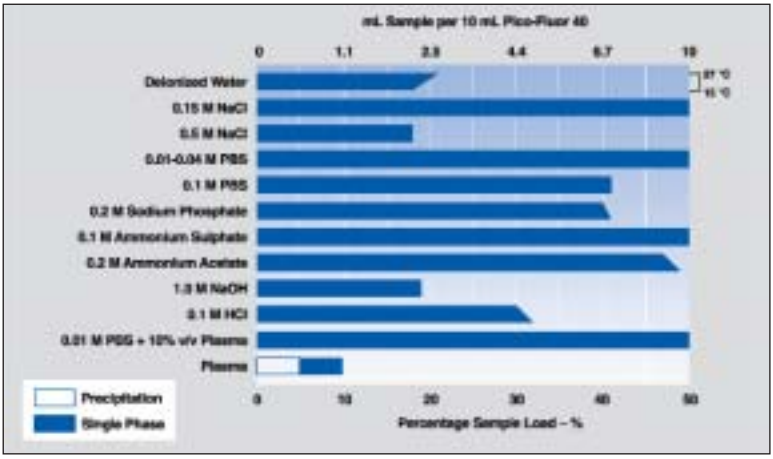
Pico-Fluor 30

Pico-Fluor 30 is a complete, ready-to-use cocktail specially formulated for counting high sample loads of aqueous solutions. It excels in the incorporation of samples such as phosphate-buffered saline with sample loads often exceeding 30%.

Pico-Fluor 40

Pico-Fluor 40 is a universal cocktail for use with both conventional 20 mL size vials and miniature vials. It has a large sample holding capacity and high quench resistance and is compatible with tissue solubilizers.

Typical sample load capacity of Pico-Fluor 40 with various sample types



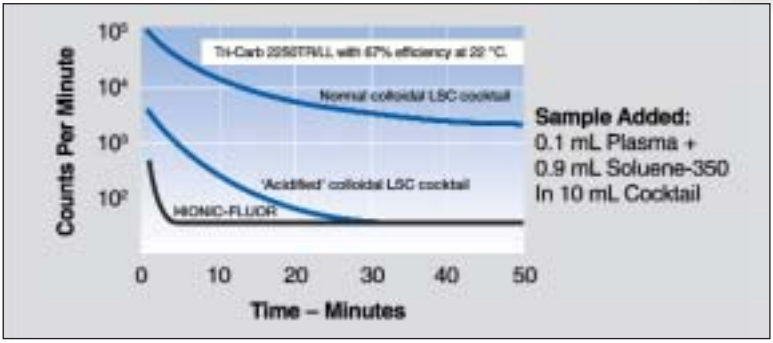
Filter-Count

Filter-Count™ is specifically formulated to dissolve cellulose nitrate membrane filters. It can also dissolve mixed cellulose esters and polyvinyl chloride (PVC) filters, although these sample types may require additional time. Filter-Count can be used for wet or dry filter counting, reducing sample preparation procedures and improving counting results by enabling the use of external standard quench monitoring.

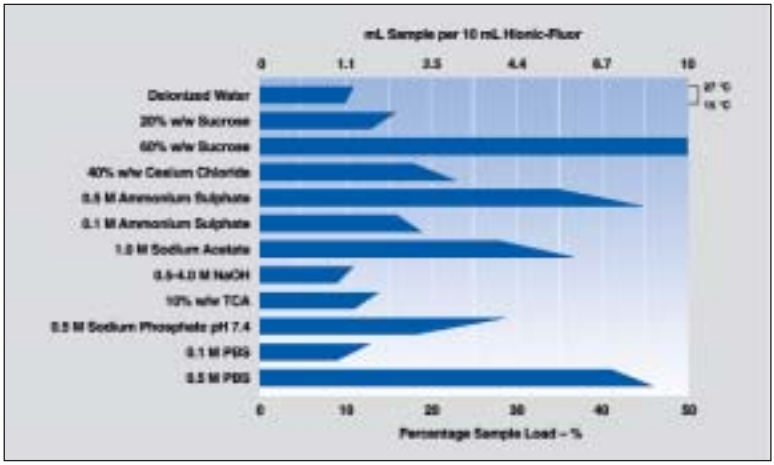
Hionic-Fluor

Hionic-Fluor™ is a cocktail for samples with high ionic strength and solubilized samples in strong alkaline media. Hionic-Fluor exhibits extremely fast chemiluminescence decay with alkaline solutions or tissue solubilizers such as Soluene®-350 and SOLVABLE™.

Decay of Chemiluminescence in Hionic-Fluor



Typical sample load capacity of Hionic-Fluor with various sample types



Product	Product No.	Size
Filter-Count	6013141	1 x 1 L
	6013149	2 x 5 L
Hionic-Fluor	6013311	1 x 1 L
	6013319	2 x 5 L
	6013312	1 x 20 L
Pico-Fluor 15	6013059	2 x 5 L
Pico-Fluor 30	6013049	2 x 5 L
Pico-Fluor 40	6013349	2 x 5 L

A sample size of Hionic-Fluor is available. To order a sample, please contact your PerkinElmer Sales Representative.

Other Classical Cocktails

Aquasol-2

Aquasol™-2 is a second generation, universal LSC cocktail that improves and extends the features of its predecessor cocktail, Aquasol. It is xylene based and is suitable for difficult-to-count samples. Aquasol-2 is a gelling cocktail and yields high counting efficiencies while still accepting water samples up to 50% loading.

Aquassure

Aquassure® is a gelling pseudocumene-based LSC cocktail and is suitable for counting a wide range of samples with great flexibility in sample volume. Aquassure has the benefits of reduced permeation through polyethylene, higher tritium counting efficiency and lower vapor pressure.

Atomlight

Atomlight® is a pseudocumene-based LSC cocktail that is ideal for counting high salt concentration aqueous samples. It holds the maximum amount of sample in the minimum amount of cocktail and is ideal for use with miniature vials.

Biofluor

Biofluor® is a pseudocumene-based LSC cocktail ideal for counting low to intermediate volumes of aqueous samples. It is a high efficiency monophasic cocktail that will accommodate up to 2 mL of aqueous sample in 15 mL cocktail.

Econofluor-2

Econofluor®-2 is a pseudocumene based LSC cocktail blended for optimal counting of organic samples and non-aqueous solutions. Econofluor-2 is compatible with most organics, including acetic and fatty acids, lipids, steroids, fats, terpenes and prostaglandins. Econofluor-2 is also ideally suited for use in two-phase extraction assays (e.g., CAT assays).

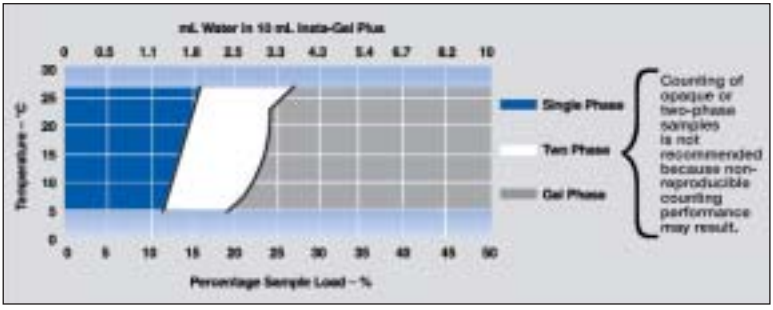
Insta-Fluor Plus

Insta-Fluor™ Plus is a pseudocumene-based cocktail blended for optimal counting of organic samples and non-aqueous solutions. Simply combine the organic sample with Insta-Fluor Plus, shake to ensure homogeneity and count. Insta-Fluor Plus is ideally suited for use in two-phase extraction assays (e.g., CAT assays).

Insta-Gel Plus

Insta-Gel Plus is the pseudocumene-based cocktail of choice for a large variety of applications. It excels in the incorporation of water and aqueous-soluble samples and is equally useful for organic-soluble samples. Due to the very high sample holding capacity and its typical gel formation, Insta-Gel Plus is ideal for counting large volumes of water, TLC scrapings and suspended solids.

Typical phase diagram of Insta-Gel Plus for water



Note: For low level counting of distilled water samples, Ultima Gold LLT is recommended.

Product	Product No.	Size
Aquasol-2	6NE9529	2 x 5 L
Aquassure	6NE9659	2 x 5 L
Atomlight	6NE9689	2 x 5 L
Biofluor	6NE9619	2 x 5 L
Econofluor-2	6NE9699	4 x 2.5 L
Insta-Fluor Plus	6013121	1 x 1 L
	6013127	4 x 2.5 L
Insta-Gel Plus	6013391	1 x 1 L
	6013399	2 x 5 L

Sample Oxidizer Cocktails

These pseudocumene-based oxidizer cocktails are designed for use with PerkinElmer's Sample Oxidizers to ensure superior performance and consistently reliable results.

Carbo-Sorb E

Carbo-Sorb® E is a high capacity radioactive carbon dioxide absorber compatible with the counting cocktail Permafluor® E^+.

Monophase S

Monophase® S is specifically formulated for counting pure water samples. It will accept up to 23% water, forming a clear fluid that yields outstanding counting efficiencies. It does not foam and does not form a gel, even at extreme mixing ratios (washing cycle). It is the cocktail of choice for obtaining the highest ^3H counting performance from Sample Oxidizers.

Permafluor E^+

Permafluor E^+ is uniquely designed for counting $^{14}CO_2$ samples that are trapped in Carbo-Sorb E.

Product	Product No.	Size
Carbo-Sorb E	6013721	1 x 1 L
	6013729*	4 x 2.5 L
Monophase S	6003043	1 x 1 L
	6013107	4 x 2.5 L
	6013109	2 x 5 L
Permafluor E^+	6013181	1 x 1 L
	6013187	4 x 2.5 L

** Product No. 6013729 is only available for shipment within Europe.*

PerkinElmer Sample Oxidizer

Our flow detection cocktails are specially designed for use with PerkinElmer's Flow Scintillation Analyzer.

Ultima-Flo Safer Flow Detection Cocktail Family

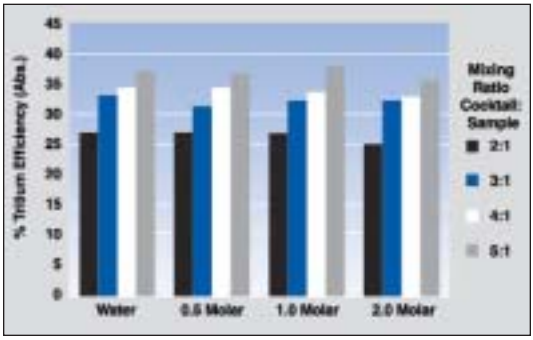
The Ultima-Flo™ family includes three novel, biodegradable cocktails for use in flow scintillation analyzers. The high loading capacity of the Ultima-Flo cocktails means less cocktail required, longer residence times and higher sensitivity.

The Ultima-Flo series can replace the complete family of classical flow cocktails. Ultima-Flo cocktails outperform the classical cocktails on mixing ratio (up to 1:1). They also provide the user with the safety features related to the high flash point solvent system.

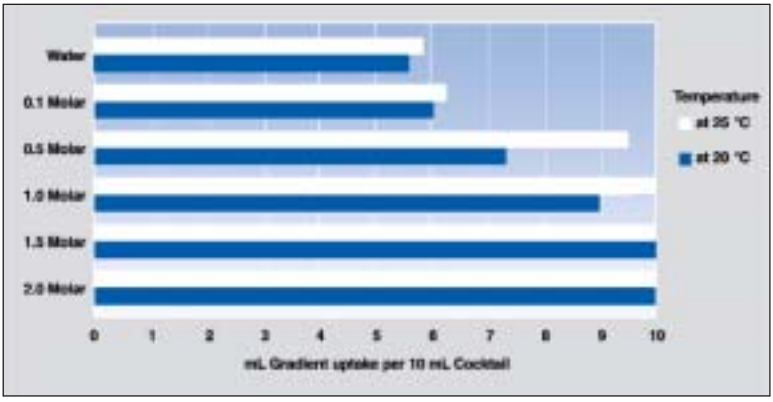
Ultima-Flo AF

Ultima-Flo AF is formulated to accept gradients up to 2.0 M ammonium formate at a 1:1 ratio with fast and easy mixing. It is the cocktail of choice when using ammonium formate buffers to elute radiolabeled inositol phosphates from HPLC columns.

Ultima-Flo AF performance with 0–2.0 M ammonium formate gradient (pH 3.8)



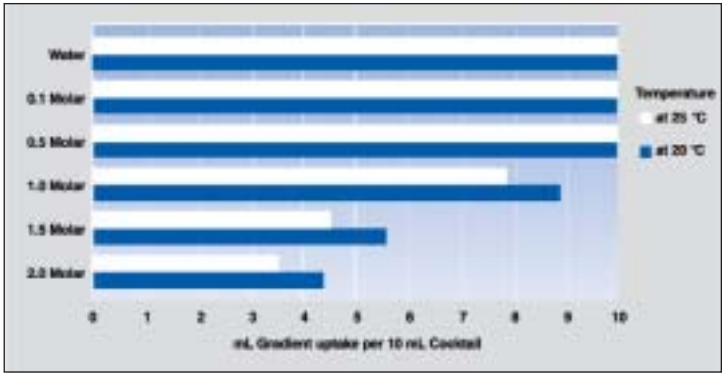
Typical sample load capacities of Ultima-Flo AF for 0–2.0 M ammonium formate gradient (pH 3.8)



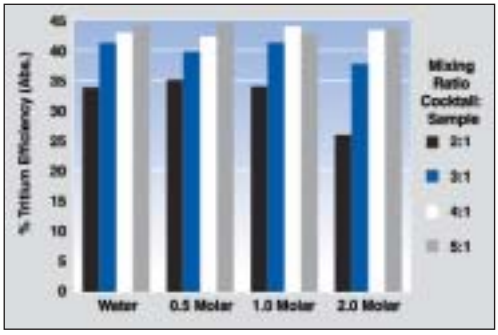
Ultima-Flo AP

Ultima-Flo AP accepts gradients up to 2.0 M ammonium phosphate with fast and easy mixing. It demonstrates high counting efficiency and quench resistance for a wide variety of sample types.

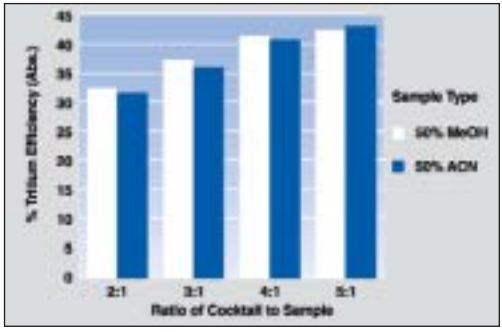
Typical sample load capacities of Ultima-Flo AP for 0–2.0 M ammonium phosphate gradient (pH 3.8)



Ultima-Flo AP performance with 0–2.0 M ammonium phosphate gradient (pH 3.8)



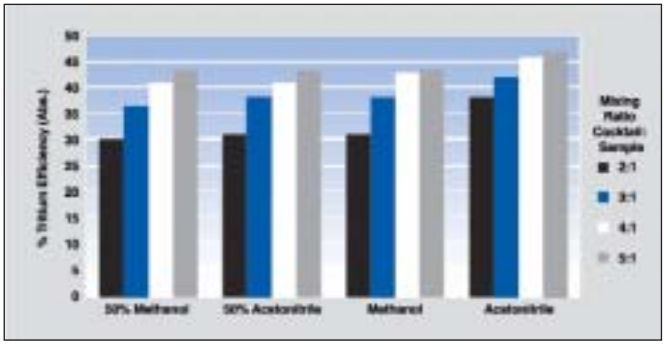
Performance for Ultima-Flo AP for other sample types



Ultima-Flo M

Ultima-Flo M is formulated for multipurpose flow counting applications. This safer cocktail has a high sample acceptance for a wide range of dilute HPLC eluents, and methanol and acetonitrile gradients. Ultima-Flo M has low viscosity, unique rapid mixing properties and is resistant to chemiluminescence.

Ultima-Flo M performance with various samples at different ratios of cocktail to sample



Typical sample load capacities for Ultima-Flo M (at 20 °C)

Sample Type	Maximum Sample Uptake	Optimal Mixing Ratio Cocktail:Sample
Deionized water	50.0%	1:1
Methanol/Water (50/50)	31.0%	3:1
Methanol	50.0%	1:1
Acetonitrile/Water (50/50)	41.2%	2:1
Acetonitrile	50.0%	1:1
0.2 M NaCl	41.2%	2:1
0.05 M NaCl	50.0%	1:1
0.1 M PBS	33.3%	2:1
0.01 M PBS	41.2%	2:1

Sample Type	Maximum Sample Uptake	Optimal Mixing Ratio Cocktail:Sample
0.01 M PBS/plasma (10%)	45.9%	2:1
1.0 M NaOH	21.6%	4:1
0.5 M NaOH	35.5%	2:1
0.1 M NaOH	50.0%	1:1
0.2 M HEPES	50.0%	1:1
0.1 M HEPES	50.0%	1:1
50 mM Tris-HCl	50.0%	1:1
0.05 M Na_2HPO_4	50.0%	1:1
0.02 M Ammonium formate	50.0%	1:1

Product	Product No.	Size
Ultima-Flo AF	6013589	2 x 5 L
Ultima-Flo AP	6013599	2 x 5 L
	6013592	1 x 20 L
Ultima-Flo M	6013579	2 x 5 L
	6013572	1 x 20 L

Sample sizes of Ultima-Flo AP and Ultima-Flo M are available. To order a sample, please contact your PerkinElmer Sales Representative.

Flo-Scint Classical Flow Detection Cocktail Family

The classical Flo-Scint™ cocktails are pseudocumene-based flow cocktails that have gained an excellent reputation when gradients, especially those with methanol and acetonitrile, need to be counted. They are resistant to chemiluminescence and are non-gelling.

Flo-Scint II

Flo-Scint II can be used with polar solvents and dilute buffers affording good sample loading capacity and low viscosity.

Flo-Scint III

Flo-Scint III is designed to work with methanol and acetonitrile gradients as well as moderately buffered solutions, including phosphates. It has good sample loading capacity, low viscosity and high counting efficiency.

Flo-Scint A

Flo-Scint A is suitable for acetonitrile/water gradients, for counting polar organic solvents and dilute salt solutions. It has excellent sample loading capacities at up to 50% in aqueous solutions. Flo-Scint A is also resistant to chemiluminescence and has a high counting efficiency.

Product	Product No.	Size
Flo-Scint II	6013529	2 x 5 L
Flo-Scint III	6013539	2 x 5 L
Flo-Scint A	6013569	2 x 5 L

MicroScint LSC Cocktails

Specifically formulated for use with PerkinElmer's TopCount Microplate Scintillation and Luminescence Counter, MicroScint™ cocktails mix easily with samples for rapid uptake of aqueous and non-aqueous samples in microplates. These safer cocktails provide you with a choice of optimal characteristics, including excellent counting efficiency, high sample capacity, quench resistance and polystyrene compatibility.

MicroScint-20

MicroScint-20 cocktail accepts dilute aqueous samples at up to 20% loading (up to 25 µL in 100 µL MicroScint-20). With these sample types, MicroScint-20 cocktail mixes easily and completely upon agitation with an orbital shaker. It is the cocktail of choice for counting filters that have not been completely dried.

MicroScint-20 has an absolute, unquenched tritium efficiency of approximately 52% when measured in a 24-well white polystyrene OptiPlate™ microplate.

MicroScint-40

MicroScint-40 cocktail accepts dilute aqueous samples at up to at least 40% loading (up to 70 µL in 100 µL MicroScint-40). It also mixes easily with most sample types but slightly longer agitation may be necessary when handling large sample volumes or more concentrated samples.

MicroScint-40 has an absolute, unquenched tritium efficiency of approximately 40% when measured in a 24-well white polystyrene OptiPlate microplate.

MicroScint-E

MicroScint-E cocktail is used for assays that require *in situ* partitioning of the radionuclide-containing lipid phase from the aqueous phase in microplates. This cocktail extracts the lipids or other non-polar compounds from the aqueous phase in such assays, enabling direct counting of the samples after cocktail addition, since the label is preferentially taken up into the lipophilic cocktail.

MicroScint-E cocktail has an absolute, un-quenched tritium efficiency of approximately 50% when measured in a 24-well white polystyrene OptiPlate microplate.

MicroScint-O

MicroScint-O cocktail is used for counting non-polar organic samples such as hexane, heptane, ethyl acetate, etc., and for dried filters. It is particularly useful for organic samples produced from enzyme inhibition assays. MicroScint-O cocktail does not contain surfactants and is not miscible with water, so it is unsuitable for counting aqueous samples.

MicroScint-O cocktail has an absolute, un-quenched tritium efficiency of approximately 58% when measured in a 24-well white polystyrene OptiPlate microplate.

MicroScint-PS

MicroScint-PS cocktail, specifically formulated for polystyrene compatibility, is suitable for use with virtually any type of microplate and provides high counting stability with minimal change in count rate within a 24 hour period. It has almost identical sample handling capabilities to MicroScint-20 with respect to sample concentration and loading, but has a lower viscosity and is therefore easier and quicker to dispense.

MicroScint-PS cocktail has an absolute, un-quenched tritium efficiency of approximately 48% when measured in a 24-well white polystyrene OptiPlate microplate.

Product	Product No.	Size
MicroScint-20	6013621	1 x 1 L
MicroScint-40	6013641	1 x 1 L
	6013647	4 x 2.5 L
MicroScint-E	6013661	1 x 1 L
MicroScint-O	6013611	1 x 1 L
MicroScint-PS	6013631	1 x 1 L

Meltilex Solid Scintillators

Meltilex® melt-on solid scintillator, for use with filtermat-harvested or dot-blotted samples, is an attractive alternative to traditional scintillation cocktails. Meltilex is especially well suited for use with plate counters. Simply place a sheet of Meltilex and a filtermat containing 96 samples together. Run these through a heat sealer or heat on a hot plate to melt. Sample preparation takes only one or two minutes per filtermat.

- **Easy to use: simply melt onto a filtermat, completely encapsulating the samples.**
- **Fixes samples in position: eliminates the risk of sample migration or partial elution into cocktail.**
- **Ensures stable counting conditions and long-term storage.**
- **Reduces waste disposal costs: produces no liquid waste.**
- **Reduces consumables costs: carrier vials can be reused.**
- **Versatile: use with glass fiber nitro-cellulose or nylon filtermats with no increase in non-specific binding.**
- **Available in a variety of sizes and thicknesses.**

Typical Relative Counting Efficiency using Meltilex Compared to Scintillation Cocktail

Isotope	Efficiency (%)
^{51}Cr	61
^{3}H	75
^{125}I	78
^{14}C	100
^{45}Ca	97
^{32}P	100

Product	Product No.	Size
Meltilex A melt-on scintillator for Betaplate 1205	1205-441	100/pack
Meltilex B melt-on scintillator for Betaplate 1205	1205-442	75/pack
Meltilex B melt-on scintillator for Betaplate 1204	1204-442	75/pack
Meltilex A melt-on scintillator for MicroBeta 1450	1450-441	100/pack
Meltilex B melt-on scintillator for MicroBeta 1450	1450-442	75/pack

Safer Tissue Solubilizers

SOLVABLE

SOLVABLE is an aqueous-based solubilizer that has an excellent capacity for the solubilization of wet tissue, aqueous tissue homogenates, proteins, nucleotides and other substances into a solution. With the exception of plant material, SOLVABLE can replace the classical solubilizer Soluene-350 for many applications, increasing safety in the laboratory due to its aqueous nature. SOLVABLE is compatible with Ultima Gold and has a superior mixing ratio with safer cocktails (2.5 mL sample in 10 mL cocktail).

- Elutes samples from both agarose and polyacrylamide gels.
- Fast digestion of whole tissue homogenates and whole blood.
- Effectively captures $^{14}CO_2$ in enzymatic assays.
- Low chemiluminescence produced.
- Compatible with Ultima Gold and Hionic-Fluor.

Product	Product No.	Size
SOLVABLE	6NE9100	500 mL

Classical Tissue Solubilizers

Soluene-350

Soluene-350 is a strong organic base formulated with toluene. It has an excellent capacity for the solubilization of wet tissue, aqueous tissue homogenates, proteins, nucleotides, plant material and other substances into a solution compatible with liquid scintillation cocktails. Compatible with Hionic-Fluor (4 mL sample in 10 mL cocktail) and Ultima Gold (1 mL sample in 10 mL cocktail).

Product	Product No.	Size
Hyamine Hydroxide 10-X	6003005	500 mL
OptiSolv	1200-435	500 mL
Soluene-350	6003038	500 mL
	6003037	2 x 2.5 L

OptiSolv

OptiSolv is a strong organic base, formulated with toluene, which has an excellent capability for the solubilization of biologicals and plants into a solution compatible with liquid scintillation cocktails.

- Ideal for tissue homogenates, whole blood and high water content samples such as plasma, brain and polyacrylamide gels.
- Solubilization rate can be increased by warming up to 50–60 °C.
- Minimum chemiluminescence produced.
- Ideal for counting with Hionic-Fluor and Ultima Gold.

Hyamine Hydroxide® 10-X

Hyamine Hydroxide® 10-X is a quaternary ammonium hydroxide solution. It can be used to solubilize many biological tissues and as a $^{14}CO_2$ trapping agent.

Compatible with Insta-Fluor Plus (7.5 mL of Hyamine Hydroxide® saturated with carbon dioxide in 10 mL cocktail) and Emulsifier Safe (3 mL of Hyamine Hydroxide® saturated with carbon dioxide in 10 mL cocktail. The latter provides a safer system due to the high flash-point of this cocktail.

- **Solubilizes many biological tissues.**
- **Resistant to chemiluminescence.**
- **Recommended $^{14}CO_2$ trapping agent for *helicobacter pylori* and urea "breath" test studies.**
- **Compatible with Emulsifier-Safe and Insta-Gel Plus.**

Sample Preparation Techniques

Treatment	Description	Examples
1. Dissolving	Dissolve sample directly into the cocktail or use a co-solvent.	Organic samples, e.g., lipids, steroids, etc. dissolved directly in LSC cocktails.
2. Emulsifying	Aqueous samples counted in "surfactant-containing" LSC cocktails (colloidal-solutions).	Various salt/buffer solutions, acids and alkaline samples in ready-for-use LSC cocktails.
3. Suspending	Suspend insoluble particles in a stable gel phase.	Soil samples in Insta-Gel Plus.
4. Extracting or Eluting	Dissolving labeled compounds from solid phase into solution.	TLC-scrapings, paper-chromatograms, polyacrylamide gel slices, cellulose nitrate filters.
5. Solubilizing	Digesting tissue material (biological) using alkaline hydrolysis (tissue solubilizer).	Cell material, feces, tissue samples digested in Soluene-350 or SOLVABLE.
6. Wet Oxidation	Digesting sample material with strong acids and peroxides.	Digestion of plant material in nitric acid or perchloric acid with hydrogen peroxide.
7. Combustion	Combusting of dry and wet samples with trapping of $^{14}CO_2$ and $^{3}H_2O$ in suitable trapping agents.	Absorbtion of $^{14}CO_2$ in Carbo-Sorb E, Soluene-350 or Hyamine Hydroxide®; $^{3}H_2O$ in Monophase S.

LIPIDEX

LIPIDEX products are lipophilic, hydrophobic column packing materials for liquid chromatography used to separate a variety of steroids, prostaglandins, lipids and other natural products. LIPIDEX-1000 and LIPIDEX-5000 are alkoxylated derivatives of Sephadex® LH-20. Approximately 10% of the hydroxy groups of LIPIDEX-1000 are substituted with long alkyl chains and in LIPIDEX-5000 the substitution is approximately 50%. The polarity of LIPIDEX is a function of this substitution; thus LIPIDEX-1000 is more polar than LIPIDEX-5000.

Product	Product No.	Size
LIPIDEX-1000	6008301	25 g
LIPIDEX-5000	6008303	25 g

Autoradiography Enhancers

EN^{3}HANCE Liquid Autoradiography Enhancer

- Greatly simplifies gel processing as compared to Bonner and Lasky's method: requires no dehydration, a short preparation time and overall processing time is reduced from 5 hours to 90 minutes.
- Can be used for both polyacrylamide and agarose gels: method of choice for agarose gels.
- Performs equivalent to PPO/DMSO for polyacrylamide gels, but eliminates gel distortion: unlike PPO/DMSO, does not shrink gel.
- Contains no DMSO, odorless.

EN^{3}HANCE Spray Surface Autoradiography Enhancer

- Designed for use with ^{3}H-, ^{14}C- and ^{35}S-labeled compounds isolated on hybridization membranes, TLC plates and similar solid supports.
- Significantly reduces exposure times and permits the detection of extremely low isotope levels.
- Non-reactive with x-ray film and most samples and supports.
- Eliminates mixing of liquids and spillage.
- Not intended for use with tissue or gel fluorography.

ENLIGHTNING Rapid Autoradiography Enhancer

- Safer alternative for gels.
- Involves a single-step process: requires no more than one-half hour to perform.
- Produces high-quality fluorograms: effective with polyacrylamide and mixed gels.
- Store at room temperature: long shelf life.
- Contains no DMSO, odorless.
- All products are shipped and stored at ambient temperature.

Product	Product No.	Size
EN^{3}HANCE® Autoradiography Enhancer	6NE9701	1 L
EN^{3}HANCE Spray Surface Autoradiography Enhancer	6NE970C	2 oz. (59 mL) spray can
ENLIGHTNING® Rapid Autoradiography Enhancer	6NE9741	1 L

Decontaminants & Cleaners

AbSolve Glassware Cleaner

- Easily and inexpensively removes serious RNase or DNA contamination (autoclaving does not destroy DNA). Simply soak plastic and glassware in a 2% solution for 30 minutes, rinse and use.
- Ideal for prewashing plastic tubes for PCR. AbSolve™ prevents DNA contamination of storage and reaction vessels from exogeneous sources.
- Use to clean glassware for electrophoresis. Glass plates rinse easily and AbSolve leaves no residue to interfere with gel polymerization or silver staining.
- Safe, non-abrasive AbSolve does not etch glass, contain strong acids, or emit toxic fumes.

COUNT-OFF Liquid Concentrate

- Ideal, all-purpose decontaminant: safe, efficient and economical.
- Quickly and effectively cleans up even the most persistent leftovers: proven most effective cleanser for removing radioactive residues (^{3}H, ^{14}C, ^{32}P and ^{125}I), stopcock and vacuum greases, lanolin and petroleum jelly, dried blood and serum, fatty and amino acids, protein complexes, and polymer films and other stubborn residues.
- Stable under extreme temperature fluctuations (-50 °C to 150 °C).
- Safer than strongly acidic cleaners, such as chromic acid: solutions will not produce toxic gases from substrates containing ^{14}C, ^{131}I, ^{35}S, or ^{36}Cl.
- Easy to use: adjust concentration, soaking time and temperature as needed to speed up decontamination or for particularly stubborn substances such as dried blood.

COUNT-OFF Surface Cleaner

- Quickly and safely decontaminates small radioactive spills from benches, shields, and appliances: also efficiently cleans instrument housings, hood corners, centrifuge cups and heads, and LSC counter mechanisms.
- Traps and suspends radioactive particles in foam: makes clean-up easy and reduces the likelihood of spreading contamination to hands and clothing.
- Removes both ionic and non-polar radioactivity.
- Cleans-up stubborn grease, resins, blood and wax, even from rough surfaces.

Pico-Kleen N

Pico-Kleen N is a concentrated liquid detergent developed as an all-purpose cleaning agent and radioactive decontaminant. Pico-Kleen N is essentially neutral, in which mildness is combined with an outstanding surfactant formulation resulting in an effective cleaning action. Depending on the type of radioactive contaminated surface and isotopes, Pico-Kleen N will effectively remove the contamination when properly applied.

Product	Product No.	Size
AbSolve Glassware Cleaner	6NE9711	1 x 1 L
COUNT-OFF™ Liquid Concentrate	6NE9422	1 x 2.5 L
	6NE9427	4 x 2.5 L
COUNT-OFF Surface Cleaner	6NE942T	6 x 22 oz. (650 mL) pump bottles
Pico-Kleen N	6013819	2 x 5 L

Liquid Scintillation Counting Vials

PerkinElmer offers high quality glass and plastic vials. The best vial to choose is dependent on the type and volume of sample to be counted and the cocktail that will be used.

Glass Vials

Glass vials are manufactured from low potassium glass tubing. The tube diameter and the wall thickness are very closely controlled. The uniform wall thickness contributes to excellent counting reproducibility.

- Chemically inert: suitable for use with aggressive reagents and tissue solubilizers.
- Good visibility: to check sample/cocktail appearance.
- No solvent permeation: when classical LSC cocktails are used.

Choice of Caps

- **Foil-lined urea**: best for airtight seal
- **Poly-cone line**: best for aggressive reagents such as alkalis and oxidizer reagents
- **Poly screw**: basic plastic cap, no insert

Plastic Vials

Plastic vials are injection (blow) molded to exacting specifications from virgin high-density (linear) polyethylene (HDPE). Caps are recessed to assure reliable loading and transferring in automatic sample changers without skipping or jamming. Since polyethylene vials are produced from petrochemicals, they contain no measurable background and are preferred for low activity counting applications.

- Lower background level than glass vials.
- Higher counting efficiency than glass vials.
- Combustible: easier waste disposal.
- No solvent permeation with safer, high-flash point cocktails such as the Ultima Gold and OptiPhase HiSafe families.

Our miniature vials are uniquely designed for safer, more confident sample preparation. Our plastic vials are manufactured from high-density polyethylene (HDPE) and are available with patented "anti-static" treatment. Unique closure designs are used to ensure fast, easy and comfortable sample preparation.

Pico Pro Vial - 4 mL

Our Pico Pro Vial™ is a 4 mL plastic scintillation vial uniquely suited for use in cell harvesting systems and general purpose LSC counting. A push-on/stay-on cap provides fast closure of vials.

For use in the trays of cell harvesting systems, the caps are connected in strings of six, with spacing corresponding to the 6 x 16 formats of the trays. After the glass fiber filters are completely dried, simply punch into Pico Pro Vials and add up to 4 mL scintillation cocktail, such as Ultima Gold F. Lay a string of caps over a row of six vials, and press the caps onto the vials until a "click" is heard. The connections between the caps are automatically broken, and the remaining strings are folded upwards.

Specifications

- Height with cap: 60.8 mm.
- Diameter: 14.2 mm.
- Diameter of opening: 11.2 mm.
- Diameter of cap: 14.0 mm.
- Wall thickness: 1.1 mm.
- Nominal volume: 4.0 mL.
- Maximum volume: 4.5 mL.
- Temperature resistance: up to 80 °C.

Pico Prias Vial - 6 mL

Our polyethylene Pico Prias Vial™ yields high counting efficiencies with 3–6 mL of LSC cocktail.

Specifications

- Height with cap: 57.5 mm.
- Diameter: 15.0 mm.
- Diameter opening: 12.3 mm.
- Diameter of cap: 16.2 mm.
- Wall thickness: 1.3 mm.
- Nominal volume: 6.0 mL.
- Maximum volume: 6.5 mL.
- Temperature resistance: up to 80 °C.

Pico 'Hang-In' Vial - 6 mL

Our Pico 'Hang-In' Vial™ is a miniature polyethylene scintillation vial for use in standard 20 mL liquid scintillation analyzers. The unique self-centering design allows a 20 mL LSC vial to be used as a carrier. This system makes it possible to use large and small vials (small vial contained in a large vial) intermixed in one rack.

Specifications

- Height with cap: 57.5 mm.
- Diameter: 15.0 mm.
- Diameter of opening: 12.3 mm.
- Diameter of cap: 18.9 mm.
- Wall thickness: 1.3 mm.
- Nominal volume: 6.0 mL.
- Maximum volume: 6.5 mL.
- Temperature resistance: up to 80 °C.

Pico Glass Vial - 7 mL

Our Pico Glass Vial™ is a low background, borosilicate glass vial. High counting efficiencies compared to standard size glass vials are obtained with as little as 3 mL of LSC cocktail. These vials feature low background and are non-permeable to aromatic hydrocarbons.

Specifications

- Height with cap: 57.3 mm.
- Diameter: 16.7 mm.
- Diameter of opening: 8.3 mm.
- Diameter of cap: 15.3 mm.
- Wall thickness: 0.9 mm.
- Nominal volume: 7.0 mL.
- Maximum volume: 8.0 mL.
- Temperature resistance: >100 °C.

Pico Prias Vials

Pico Glass Vials

Pony Vial - 6 mL

Our Pony Vial™ is a miniature polyethylene vial with a unique (push-on/twist-off cap) closure system not available on any other screw cap designs.

- Push-on cap provides rapid closure: for routine analysis where many vials have to be handled, push-cap vials are real time savers.
- Twist-off cap for safer reopening; the Pony Vial is compatible with all small vial counters and PerkinElmer Varisette™ sample changers.

Specifications

- Height with cap: 56.6 mm.
- Diameter: 16.0 mm.
- Diameter of opening: 12.5 mm.
- Diameter of cap: 15.9 mm.
- Wall thickness: 1.3 mm.
- Nominal volume: 5.5 mL.
- Maximum volume: 6.0 mL.
- Temperature resistance: up to 80 °C.

Pony 'Hang-In' Vial - 6 mL

Our Pony 'Hang-In' Vial is a miniature polyethylene scintillation vial with all the features of the Pony Vial, but with a different cap that allows it to 'hang' into a standard 20 mL LSC vial as a carrier.

Specifications

- Height with cap: 56.6 mm.
- Diameter: 16.0 mm.
- Diameter of opening: 12.5 mm.
- Diameter of cap: 19.0 mm.
- Wall thickness: 1.3 mm.
- Nominal volume: 5.5 mL.
- Maximum volume: 6.0 mL.
- Temperature resistance: up to 80 °C.

Polypropylene Vial for MicroBeta - 4 mL

Polypropylene Vial and Cap for MicroBeta are 45 mm in height and hold 4.0 mL of LSC cocktail. In MicroBeta TriLux, they are counted in vertical position using cassette 1450-117.

Pony Vials

Miniature Vials Ordering Guide

Product	Product No.	Description
Pico Pro Vial - 4 mL	6000252	2,000/case Economically packed. Caps packed separately.
	6000253	2,000/case Same as above, with exclusive Anti-Static treatment.
Pico Prias Vial - 6 mL	6000192	2,000/case Economically packed. Caps packed separately.
	6000193	2,000/case Same as above, with exclusive Anti-Static treatment.
Pico 'Hang-In' Vial - 6 mL	6000186	2,000/case Economically packed. Caps packed separately.
	6000187	2,000/case Same as above, with exclusive Anti-Static treatment.
Pico Glass Vial - 7 mL	6000167	1,000/case Shrink-wrapped in 5 partitioned trays of 200 vials each. Foil-lined, white urea screw caps packed separately.
Pony Vial - 6 mL	6000592	1,000/case Shrink-wrapped in 5 partitioned trays of 200 vials each. Caps packed separately.
	6000292	2,000/case Economically packed. Caps packed separately.
	6000293	2,000/case Same as above, with exclusive Anti-Static treatment.
Pony 'Hang-In' Vial - 6 mL	6000286	2,000/case Economically packed. Caps packed separately.
	6000287	2,000/case Same as above, with exclusive Anti-Static treatment.
Polypropylene Vial for MicroBeta - 4 mL	1200-421	3,000/case Economically packed. Caps packed separately.
Pico Glass Vial Caps	6000179	1,000/case White urea screw caps with foil liner.

Hinge Cap Vial - 8 mL

Our 8 mL capacity Hinge Cap Vial™, made from high-density polyethylene (HDPE), is a revolution in sample preparation for liquid scintillation counting. Simply prepare your samples and close the cap; the integral hinge fits flush with the vial for snag-free counting in miniature vial cassettes.

Fast, Easy and Efficient Sample Preparation

- 33% more capacity than 6 mL miniature vials: allows miniaturization from 20 mL size vials when used with high sample capacity cocktails such as Ultima Gold XR.
- Enables reduced cocktail consumption: reducing the amount of waste produced and waste disposal costs.
- Pre-labeling of attached cap: avoids potential sample mix-ups for GLP compliance.
- Fits miniature vial cassettes.

Specifications

- Height with cap: 59.0 mm.
- Diameter: 17.5 mm.
- Diameter of opening: 14.0 mm.
- Diameter of cap: 16.7 mm.
- Wall thickness: 1.3 mm.
- Nominal volume: 8.0 mL.
- Maximum volume: 9.0 mL.
- Temperature resistance: up to 80 °C.

Midi-Vial - 8 mL

Our Midi-Vial™ is an 8 mL HDPE vial, providing 33% more sample capacity than miniature vials. This allows miniaturization from 20 mL size vials when used in combination with high sample capacity cocktails such as Ultima Gold XR. It features the same unique push-on/twist-off closure system as Pony Vials.

Specifications

- Height with cap: 62.0 mm.
- Diameter: 17.5 mm.
- Diameter of opening: 14.0 mm.
- Diameter of cap: 17.4 mm.
- Wall thickness: 1.9 mm.
- Nominal volume: 8.0 mL.
- Maximum volume: 8.0 mL.
- Temperature resistance: up to 80 °C.

Maxi-Vial - 18 mL

The large opening of our Maxi-Vial™ promotes easy sample loading of filters and other sample types. It features very low "classical" solvent diffusion due to its thick 2 mm walls.

Specifications

- Height with cap: 61.0 mm.
- Diameter: 26.5 mm.
- Diameter of opening: 22.6 mm.
- Diameter of cap: 26.9 mm.
- Wall thickness: 2 mm.
- Nominal volume: 18.0 mL.
- Maximum volume: 20.0 mL.
- Temperature resistance: up to 80 °C.

Product	Product No.	Description
Hinge Cap Vial - 8 mL	6000480	2,000/case. Economically packed. Caps packed separately.
	6000488	500/case. Shrink-wrapped in 5 partitioned trays of 100 vials each.
Midi-Vial - 8 mL	6000288	2,000/case. Economically packed. Caps packed separately.
	6000289	2,000/case. Same as above, with exclusive Anti-Static treatment.
Maxi-Vial - 18 mL	6000201	1,000/case. Economically packed. Caps packed separately.
	6000203	1,000/case. Same as above, with exclusive Anti-Static treatment.

Super Polyethylene Vial with Glass Vial Thread - 20 mL

Our Super Polyethylene Vial™ has excellent mechanical strength and a seamless bottom and walls. The glass vial thread enables use of caps for 20 mL glass vials.

Specifications

- Height with cap: 60.8 mm.
- Diameter: 27.0 mm.
- Diameter of opening: 17.5 mm.
- Diameter of cap: 24.9 mm.
- Wall thickness: 1 mm.
- Nominal volume: 20.0 mL.
- Maximum volume: 24.0 mL.
- Temperature resistance: up to 80 °C.

Super Polyethylene Vial with Quick Closure - 20 mL

This Super Polyethylene Vial features a polyethylene quick closure screw cap with a smooth grip.

Specifications

- Height with cap: 60.8 mm.
- Diameter: 27.0 mm.
- Diameter of opening: 17.5 mm.
- Diameter of cap: 24.7 mm.
- Wall thickness: 1 mm.
- Nominal volume: 20.0 mL.
- Maximum volume: 24.0 mL.
- Temperature resistance: up to 80 °C.

Low Diffusion Polyethylene Vial - 20 mL

Our Low Diffusion Polyethylene Vial carries a micron thin Teflon®-type coating on the inside surface, reducing the diffusion of classical type solvents by a factor of 10–20 times. The cap is lined with aluminum foil as a barrier. This vial was developed for long-term low-level measurements as a cost effective alternative to very expensive Teflon® counting vials. They are 100% anti-static and provide high counting efficiency and low background.

Specifications

- Height with cap: 60.8 mm.
- Diameter: 27.0 mm.
- Diameter of opening: 17.5 mm.
- Diameter of cap: 24.9 mm.
- Wall thickness: 1 mm.
- Nominal volume: 20.0 mL.
- Maximum volume: 24.0 mL.
- Temperature resistance: up to 80 °C.

High Performance Glass Vial - 20 mL

Our High Performance Glass Vial™ is made from specially selected low potassium borosilicate glass and provides high UV transmission (≥90%). The controlled low and stable background assures batch-to-batch homogeneity. They are supplied with a white cap with a good writing surface in dust-free tray packaging.

Specifications

- Height with cap: 60.5 mm.
- Diameter: 27.3 mm.
- Diameter of opening: 16.2 mm.
- Diameter of cap: 24.9 mm.
- Wall thickness: 0.9 mm.
- Nominal volume: 20.0 mL.
- Maximum volume: 24.0 mL.
- Temperature resistance: >100 °C.

High Performance Glass Vials

Econo Glass Vial - 20 mL

Our Econo Glass vial is made from standard borosilicate glass, specially selected for acceptable background. They are economical and provide excellent counting performance.

Specifications

- Height with cap: 60 mm.
- Diameter: 27.3 mm.
- Diameter of opening: 16.2 mm.
- Diameter of cap: 24.9 mm.
- Wall thickness: 0.9 mm.
- Nominal volume: 20.0 mL.
- Maximum volume: 22.0 mL.
- Temperature resistance: up to 80 °C.

Econo Glass Vials

Oximate Vial - 20 mL

Our Oximate Vial™ is made of polyethylene or glass and features a special cap design for use in PerkinElmer's Sample Oxidizer.

Specifications

- Height with cap: 60.8 mm.
- Diameter: 27.3 mm.
- Diameter of opening: 16.2 mm.
- Diameter of cap: 24.9 mm.
- Wall thickness: 0.9 mm.
- Nominal volume: 20.0 mL.
- Maximum volume: 24.0 mL.
- Temperature resistance: >100 °C.

Standard Vials Ordering Guide

Product	Product No.	Description
Super Polyethylene Vial with Glass Vial Thread - 20 mL	6001085	500/case Packed in 5 partitioned trays of 100 vials each with foil-lined urea screw caps on.
	6001087	1,000/case Economically packed. Foil-lined urea screw caps packed separately.
Super Polyethylene Vial with Quick Closure - 20 mL	6008117	1,000/case Economically packed. Caps packed separately.
	6008118	1,000/case Same as above, with exclusive Anti-Static treatment.
	6000375	500/case Shrink-wrapped in 5 partitioned trays of 100 vials each. Caps packed separately.
	6001075	500/case Packed in 5 partitioned trays of 100 vials each with caps on.
Low Diffusion Polyethylene Vial - 20 mL	6000477	100/case Shrink-wrapped in partitioned tray with caps on, with exclusive Anti-Static treatment.
Super Low Diffusion Polyvials - 20 mL	1200-422	100/package Teflon® coated polyethylene caps included.
High Performance Glass Vial - 20 mL	6001009	500/case Packed in 5 partitioned trays of 100 vials each with caps on. Special design screw cap for use in automated handling.
	6001015	500/case Packed in 5 partitioned trays of 100 vials each with foil-lined screw caps on.
	6001050	500/case Packed in 5 partitioned trays of 100 vials each. Poly-Cone lined urea screw caps packed separately.
	6000349	500/case Packed in 5 partitioned trays of 100 vials each with foil-lined urea screw caps on.
	6000128	500/case Shrink-wrapped in 10 partitioned trays of 50 vials each. Foil-lined urea screw caps packed separately.

continued

Standard Vials Ordering Guide (continued)

Product	Product No.	Description
High Performance Glass Vial - 20 mL (continued)	6000129	500/case Shrink-wrapped in 5 partitioned trays of 100 vials each. Foil-lined urea screw caps packed separately.
	6000134	500/case Shrink-wrapped in 10 partitioned trays of 50 vials each. Poly-Cone lined urea screw caps packed separately.
	6000135	500/case Shrink-wrapped in 5 partitioned trays of 100 vials each. Poly-Cone lined urea screw caps packed separately.
Econo Glass Vial - 20 mL	6000096	500/case Shrink-wrapped in 4 partitioned trays of 125 vials each. Foil-lined urea screw caps packed separately.
	6000097	500/case Shrink-wrapped in 4 partitioned trays of 125 vials each. Poly screw caps packed separately.
	6000098	500/case Shrink-wrapped in 4 partitioned trays of 125 vials each. Poly-Cone lined urea screw caps packed separately.
Econo Glass Vial - 20 mL	6000326	500/case Shrink-wrapped in 5 partitioned trays of 100 vials each. Foil-lined urea screw caps packed separately.
	6000327	500/case Shrink-wrapped in 5 partitioned trays of 100 vials each. Poly screw caps packed separately.
	6000348	500/case Shrink-wrapped in 5 partitioned trays of 100 vials each. Poly-Cone lined urea screw caps packed separately.
Glass Vials, low K-40 content - 20 mL	1210-131	500/package
Oximate Vial - 20 mL	6001095	500/case Polyethylene vials with glass vial thread. Packed in 5 partitioned trays of 100 vials each with foil-lined urea screw caps on. Special design screw cap for automated handling.
	6001009	500/case Glass vials. Packed in 5 partitioned trays of 100 vials each with foil-lined urea screw caps on. Special design screw cap for automated handling.
Glass Vial Caps	6001025	1,000/case Foil-lined urea screw caps.
	6001027	1,000/case Poly-Cone lined urea screw caps.
	6000249	1,000/case Poly screw caps for glass vials.
	6000250	1,000/case Foil-lined urea screw caps. Special design for automated handling.

Teflon® Vials

Our Teflon® vials give the best performance and are ideal particularly for low level ^{14}C dating where benzene is used. The Teflon® vials can be used with PerkinElmer's QUANTULUS Ultra Low Level Liquid Scintillation Spectrometer.

Product	Product No.	Description
Teflon® Vials - 3 mL	1220-500	10/package
Teflon® Vials - 7 mL	1220-501	10/package
Teflon® Vials - 15 mL	1220-502	10/package
Teflon® Vials - 20 mL	1220-503	10/package

Vials Selection Guide

Glass Vials	Application Need	Sample Capacity	Vial Type	Cat. No.
For applications requiring optical clarity and/or the use of aggressive or reactive reagents	High Sample Capacity	18–20 mL	High Performance Glass	6001009 6001015 6001050 6000349 6000128 6000129 6000134 6000135
			Oximate	6001095 6001009
			Econo Glass	6000096 6000097 6000098 6000326 600327 6000348
	Miniaturization	6–8 mL	Pico Glass	6000167

Plastic Vials	Application Need	Sample Capacity	Vial Type	Cat. No.
For applications requiring shatterproof and/or combustible vials and for low level counting*	High Sample Capacity	18–20 mL	Maxi-	6000201 6000203
			Super Polyethylene	6001085 6001087 6008118 6008118 6000375 6001075
			Low Diffusion Polyethylene	6000477
	Miniaturization	4–8 mL	Pony	6000582 6000292 6000293
			Pony “Hang-In”	6000286 6000287
			Pico Pro	6000252 6000253
			Pico Prias	6000192 6000193
			Pico “Hang-In”	6000186
			Midi-	6000288 6000289
			Hinge Cap	6000480 6000488
	Cell Harvesting	4 mL	Pico Pro	6000252

** For low humidity conditions, select vials with our exclusive Anti-Static treatment.*

Liquid Scintillation Cocktail Selection Guide by Filter Type

Filter Type		Filter-Count	Ultima Gold F	Ultima Gold MV	Soluene-350 + Hionic-Fluor	Filter-Count + Ultima Gold AB
Glass Fiber	Dry	✔	✔	✔		✔
	Wet	✔		✔		✔
	Dissolved					
Cellulose Nitrate	Dry		✔	✔		
	Wet			✔		
	Dissolved	✔				✔
Cellulose Acetate	Dry	✔	✔	✔		✔
	Wet	✔		✔		✔
	Dissolved				✔	
Mixed Cellulose Esters	Dry		✔	✔		
	Wet			✔		
	Dissolved	✔				✔
PVC	Dry		✔	✔		
	Wet			✔		
	Dissolved	✔				✔
Polyacrylonitrile	Dry	✔	✔	✔		✔
	Wet	✔		✔		✔
	Dissolved					
Polycarbonate	Dry	✔	✔	✔		✔
	Wet	✔		✔		✔
	Dissolved					
Teflon®	Dry	✔	✔	✔		✔
	Wet	✔		✔		✔
	Dissolved					
Nylon	Dry	✔	✔	✔		✔
	Wet	✔		✔		✔
	Dissolved					
PET	Dry	✔	✔	✔	✔	✔
	Wet	✔		✔	✔	✔
	Dissolved					
Normal Paper	Dry	✔	✔	✔	✔	✔
	Wet	✔		✔	✔	✔
	Dissolved					

Liquid Scintillation Cocktails Selection Guide by Sample Type

Sample Type: Liquid			Safer Cocktails	Classical Cocktails
SAMPLE CLASSIFICATION	Aqueous, pH <6	SAMPLE TREATMENT Direct addition	**Ultima Gold AB (#6013309)** • Up to 3 mL in 10 mL of cocktail for 0–1 M mineral acids • Up to 2 mL in 10 mL of cocktail for 1–2 M mineral acids	**Pico-Fluor 40 (#6013349)** • Up to 2 mL in 10 mL of cocktail for 0–1 M mineral acids • Up to 1 mL in 10 mL of cocktail for 1–2 M mineral acids
			Ultima Gold LLT (#6013377) • Up to 3 mL in 10 mL of cocktail for 0–1 M mineral acids • Up to 2 mL in 10 mL of cocktail for 1–2 M mineral acids	**Hionic-Fluor (#6013319)** • Up to 1.5 mL in 10 mL of cocktail for 0–1 M mineral acids • Up to 3 mL in 10 mL of cocktail for 1–2 M mineral acids
			OptiPhase HiSafe 3 (#1200–437) • Up to 3 mL in 10 mL cocktail for 0–1 M mineral acids • Up to 3 mL in 10 mL cocktail for 1–2 M mineral acids	
	Aqueous, pH 6–8, <0.1 molar	SAMPLE TREATMENT Direct addition	**Ultima Gold (#6013329)** • Up to 3 mL in 10 mL of cocktail	**Pico-Fluor 15 (#6013059)** • Up to 2 mL in 10 mL of cocktail
			Ultima Gold MV (#6013159) • Up to 2 mL in 10 mL of cocktail	**Insta-Gel Plus (#6013359)** • Up to 2 mL in 10 mL of cocktail
			Opti-Fluor (#6013199) • Up to 2.5 mL in 10 mL of cocktail	
			Emulsifier Safe (#6013389) • Up to 2 mL in 10 mL of cocktail	
			OptiPhase HiSafe 2 (#1200-436) • Up to 3 mL in 10 mL of cocktail	
	Aqueous, pH >8	SAMPLE TREATMENT Direct addition	**Ultima Gold (#6013329)** • Up to 2.5 mL in 10 mL cocktail for 0–1 M alkalis • Up to 1 mL in 10 mL cocktail for 1–2 M alkalis	**Pico-Fluor 40 (#6013349)** • Up to 2 mL in 10 mL cocktail for 0–1 M alkalis • Up to 1 mL in 10 mL cocktail for 1–2 M alkalis
			OptiPhase HiSafe 2 (#1200-436) • Up to 2.5 mL in 10 mL cocktail for 0–1 M alkalis • Up to 1 mL in 10 mL cocktail for 1–2 M alkalis	**Hionic-Fluor (#6013319)** • Up to 1.5 mL in 10 mL cocktail for 0–1 M alkalis • Up to 1 mL in 10 mL cocktail for 1–2 M alkalis
	Organic	SAMPLE TREATMENT Direct addition	**Ultima Gold F (#6013179)** • Up to 10 mL in 10 mL cocktail	**Insta-Fluor Plus (#6013127)** • Up to 10 mL in 10 mL cocktail
			Opti-Fluor O (#6013339) • Up to 10 mL in 10 mL cocktail	
			OptiScint HiSafe (#1200-434) • Up to 10 mL in 10 mL cocktail	
			BetaPlate Scint (#1205-440) • Up to 10 mL in 10 mL cocktail	

Sample Type: Solid (soluble)	Safer Cocktails	Classical Cocktails
SAMPLE CLASSIFICATION: Aqueous, pH <6 — SAMPLE TREATMENT: Direct addition	**Ultima Gold AB (#6013309)** • Up to 3 mL in 10 mL of cocktail for 0–1 M mineral acids • Up to 2 mL in 10 mL of cocktail for 1–2 M mineral acids	**Pico-Fluor 40 (#6013349)** • Up to 2 mL in 10 mL of cocktail for 0–1 M mineral acids • Up to 1 mL in 10 mL of cocktail for 1–2 M mineral acids
	Ultima Gold LLT (#6013377) • Up to 3 mL in 10 mL of cocktail for 0–1 M mineral acids • Up to 2 mL in 10 mL of cocktail for 1–2 M mineral acids	**Hionic-Fluor (#6013319)** • Up to 1.5 mL in 10 mL of cocktail for 0–1 M mineral acids • Up to 3 mL in 10 mL of cocktail for 1–2 M mineral acids
	OptiPhase HiSafe 3 (#1200–437) • Up to 3 mL in 10 mL cocktail for 0–1 M mineral acids • Up to 3 mL in 10 mL cocktail for 1–2 M mineral acids	
SAMPLE CLASSIFICATION: Aqueous, pH 6–8, <0.1 molar — SAMPLE TREATMENT: Direct addition	**Ultima Gold (#6013329)** • Up to 3 mL in 10 mL of cocktail	**Pico-Fluor 15 (#6013059)** • Up to 2 mL in 10 mL of cocktail
	Ultima Gold MV (#6013159) • Up to 2 mL in 10 mL of cocktail	**Insta-Gel Plus (#6013359)** • Up to 2 mL in 10 mL of cocktail
	Opti-Fluor (#6013199) • Up to 2.5 mL in 10 mL of cocktail	
	Emulsifier Safe (#6013389) • Up to 2 mL in 10 mL of cocktail	
	OptiPhase HiSafe 2 (#1200-436) • Up to 3 mL in 10 mL of cocktail	
SAMPLE CLASSIFICATION: Aqueous, pH >8 — SAMPLE TREATMENT: Direct addition	**Ultima Gold (#6013329)** • Up to 2.5 mL in 10 mL cocktail for 0–1 M alkalis • Up to 1 mL in 10 mL cocktail for 1–2 M alkalis	**Pico-Fluor 40 (#6013349)** • Up to 2 mL in 10 mL cocktail for 0–1 M alkalis • Up to 1 mL in 10 mL cocktail for 1–2 M alkalis
	OptiPhase HiSafe 2 (#1200-436) • Up to 2.5 mL in 10 mL cocktail for 0–1 M alkalis • Up to 1 mL in 10 mL cocktail for 1–2 M alkalis	**Hionic-Fluor (#6013319)** • Up to 1.5 mL in 10 mL cocktail for 0–1 M alkalis • Up to 1 mL in 10 mL cocktail for 1–2 M alkalis
SAMPLE CLASSIFICATION: Organic — SAMPLE TREATMENT: Direct addition	**Ultima Gold F (#6013179)** • Up to 10 mL in 10 mL cocktail	**Insta-Fluor Plus (#6013127)** • Up to 10 mL in 10 mL cocktail
	Opti-Fluor O (#6013339) • Up to 10 mL in 10 mL cocktail	
	OptiScint HiSafe (#1200-434) • Up to 10 mL in 10 mL cocktail	
	BetaPlate Scint (#1205-440) • Up to 10 mL in 10 mL cocktail	

Liquid Scintillation Cocktails Selection Guide by Sample Type

Sample Type: Solid (insoluble)	Safer Cocktails	Classical Cocktails
SAMPLE CLASSIFICATION → Digestible SOLUBILIZER → **SOLVABLE (#6NE9100)**	**Ultima Gold (#6013329)** • Up to 2 mL of SOLVABLE in 10 mL cocktail	No recommendations
	OptiPhase HiSafe 2 (#1200-436) • Up to 2 mL of SOLVABLE in 10 mL cocktail	
SAMPLE CLASSIFICATION → Digestible SOLUBILIZER → **Soluene-350 (#60003038)**	**Ultima Gold (#6013329)** • Up to 1 mL of Soluene-350 in 10 mL cocktail	**Hionic-Fluor (#6013319)** • Up to 4 mL of Soluene-350 in 10 mL cocktail
	OptiPhase HiSafe 2 (#1200-436) • Up to 1 mL of Soluene-350 in 10 mL cocktail	**Pico-Fluor 40 (#6013349)** • Up to 4 mL of Soluene-350 in 10 mL cocktail
SAMPLE CLASSIFICATION → Sample on filter SOLUBILIZER → Soluble in organic solvent	No recommendations	**Filter-Count (#6013149)**
SAMPLE CLASSIFICATION → Sample on filter SOLUBILIZER → Not soluble in organic solvent	**Ultima Gold MV (#6013159)**	**Pico-Fluor 15 (#6013059)**
SAMPLE CLASSIFICATION → Non-digestible SOLUBILIZER → Combust in a PerkinElmer Sample Oxidizer	No recommendations	(^{3}H): **Monophase S (#6013109)**
		(^{14}C): **Carbo-Sorb E (#6013729)** then **Permafluor E^{+} (#6013187)**

Sample Type: Biological	Safer Cocktails	Classical Cocktails
SAMPLE CLASSIFICATION → Plasma/Serum → SAMPLE TREATMENT → Direct addition	**Ultima Gold (#6013329)** • Up to 1 mL in 10 mL cocktail	No recommendations
	Ultima-Flo M (#6013579) • Up to 2 mL in 10 mL of cocktail	
	OptiPhase HiSafe 2 (#1200-436) • Up to 1 mL in 10 mL of cocktail	
SAMPLE CLASSIFICATION → Plasma/Serum → SAMPLE TREATMENT → Solubilization, using **SOLVABLE (#6NE9100)**	**Ultima Gold (#6013329)** • Up to 2 mL of SOLVABLE in 10 mL cocktail	No recommendations
	OptiPhase HiSafe 2 (#1200-436) • Up to 2 mL of SOLVABLE in 10 mL cocktail	
SAMPLE CLASSIFICATION → Plasma/Serum → SAMPLE TREATMENT → Solubilization, using **Soluene-350 (#60003038)**	**Ultima Gold (#6013329)** • Up to 1 mL of Soluene-350 in 10 mL cocktail	**Hionic-Fluor (#6013319)** • Up to 4 mL of Soluene-350 in 10 mL cocktail
	OptiPhase HiSafe 2 (#1200-436) • Up to 1 mL of Soluene-350 in 10 mL cocktail	**Pico-Fluor 40 (#6013349)** • Up to 4 mL of Soluene-350 in 10 mL cocktail
SAMPLE CLASSIFICATION → Plasma/Serum → SAMPLE TREATMENT → Oxidation	No recommendations	(^{3}H): **Monophase S (#6013109)**
		(^{14}C): **Carbo-Sorb E (#6013729)** then **Permafluor E^{+} (#6013187)**

SAMPLE CLASSIFICATION			Safer Cocktails	Classical Cocktails
Sample Type: Biological				
Whole blood	SAMPLE TREATMENT	Solubilization, using **SOLVABLE (#6NE9100)**	**Ultima Gold (#6013329)** • Up to 2 mL of SOLVABLE in 10 mL cocktail	No recommendations
			OptiPhase HiSafe 2 (#1200-436) • Up to 2 mL of SOLVABLE in 10 mL cocktail	
		Solubilization, using **Soluene-350 (#60003038)**	**Ultima Gold (#6013329)** • Up to 1 mL of Soluene-350 in 10 mL cocktail	**Hionic-Fluor (#6013319)** • Up to 4 mL of Soluene-350 in 10 mL cocktail
			OptiPhase HiSafe 2 (#1200-436) • Up to 1 mL of Soluene-350 in 10 mL cocktail	**Pico-Fluor 40 (#6013349)** • Up to 4 mL of Soluene-350 in 10 mL cocktail
		Oxidation	No recommendations	(^{3}H): **Monophase S (#6013109)**
				(^{14}C): **Carbo-Sorb E (#6013729)** then **Permafluor E$^+$ (#6013187)**
Milk	SAMPLE TREATMENT	Direct addition	**Opti-Fluor (#6013199)** • Up to 4.5 mL in 10 mL of cocktail	**Pico-Fluor 40 (#6013349)** • Up to 2.5 mL in 10 mL of cocktail
Urine	SAMPLE TREATMENT	Direct addition	**Ultima Gold (#6013329)** • Up to 8 mL in 10 mL of cocktail	No recommendations
			Ultima Gold LLT (#6013377) • Up to 10 mL in 10 mL of cocktail	
			OptiPhase HiSafe 2 (#1200-436) • Up to 5 mL in 10 mL of cocktail	
Feces	SAMPLE TREATMENT	Solubilization, using **SOLVABLE (#6NE9100)**	**Ultima Gold (#6013329)** • Up to 2 mL of SOLVABLE in 10 mL cocktail	No recommendations
			OptiPhase HiSafe 2 (#1200-436) • Up to 2 mL of SOLVABLE in 10 mL cocktail	
		Solubilization, using **Soluene-350 (#60003038)**	**Ultima Gold (#6013329)** • Up to 1 mL of Soluene-350 in 10 mL cocktail	**Hionic-Fluor (#6013319)** • Up to 4 mL of Soluene-350 in 10 mL cocktail
			OptiPhase HiSafe 2 (#1200-436) • Up to 1 mL of Soluene-350 in 10 mL cocktail	**Pico-Fluor 40 (#6013349)** • Up to 4 mL of Soluene-350 in 10 mL cocktail
		Oxidation	No recommendations	(^{3}H): **Monophase S (#6013109)**
				(^{14}C): **Carbo-Sorb E (#6013729)** then **Permafluor E$^+$ (#6013187)**

Liquid Scintillation Cocktails Selection Guide by Sample Type

Sample Type: Biological			Safer Cocktails	Classical Cocktails
SAMPLE CLASSIFICATION: Tissue	SAMPLE TREATMENT	Solubilization, using **SOLVABLE (#6NE9100)**	**Ultima Gold (#6013329)** • Up to 2 mL of SOLVABLE in 10 mL cocktail	No recommendations
			OptiPhase HiSafe 2 (#1200-436) • Up to 2 mL of SOLVABLE in 10 mL cocktail	
		Solubilization, using **Soluene-350 (#6003038)**	**Ultima Gold (#6013329)** • Up to 1 mL of Soluene-350 in 10 mL cocktail	**Hionic-Fluor (#6013319)** • Up to 4 mL of Soluene-350 in 10 mL cocktail
			OptiPhase HiSafe 2 (#1200-436) • Up to 1 mL of Soluene-350 in 10 mL cocktail	**Pico-Fluor 40 (#6013349)** • Up to 4 mL of Soluene-350 in 10 mL cocktail
		Oxidation	No recommendations	(^{3}H): **Monophase S (#6013109)**
				(^{14}C): **Carbo-Sorb E (#6013729)** then **Permafluor E$^+$ (#6013187)**
	Plant SAMPLE TREATMENT	Solubilization, using **SOLVABLE (#6NE9100)**	**Ultima Gold (#6013329)** • Up to 2 mL of SOLVABLE in 10 mL cocktail	No recommendations
			OptiPhase HiSafe 2 (#1200-436) • Up to 2 mL of SOLVABLE in 10 mL cocktail	
		Solubilization, using **Soluene-350 (#6003038)**	**Ultima Gold (#6013329)** • Up to 1 mL of Soluene-350 in 10 mL cocktail	**Hionic-Fluor (#6013319)** • Up to 4 mL of Soluene-350 in 10 mL cocktail
			OptiPhase HiSafe 2 (#1200-436) • Up to 1 mL of Soluene-350 in 10 mL cocktail	**Pico-Fluor 40 (#6013349)** • Up to 4 mL of Soluene-350 in 10 mL cocktail
		Oxidation	No recommendations	(^{3}H): **Monophase S (#6013109)**
				(^{14}C): **Carbo-Sorb E (#6013729)** then **Permafluor E$^+$ (#6013187)**

Sample Type: Gas			Safer Cocktails	Classical Cocktails
SAMPLE CLASSIFICATION: Carbon dioxide	TRAPPING AGENT	**Carbo-Sorb E (#6013729)**	No recommendations	**Perma-Fluor E$^+$ (#6013187)**
		NaOH	**Emulsifier Safe (#6013389)**	**Hionic-Fluor (#6013319)**
			Opti-Fluor (#6013199)	
		Hyamine Hydroxide® (#6003005)	No recommendations	**Insta-Fluor Plus (#6013127)**
Radon	N/A	N/A	**High Efficiency Mineral Oil Scintillator (#6NE9579)**	**Insta-Fluor Plus (#6013127)**
			Ultima Gold F (#6013179)	
			Opti-Fluor O (#6013339)	
			BetaPlate Scint (#1205-440)	

Flow Cocktails Selection Guide

HPLC Gradient	Safer Cocktails	Classic Cocktails
Water/Methanol Gradients	Ultima-Flo M (#6013579) Ultima-Flo AP (#6013599)	Flo-Scint III (#6013539)
Water/Acetonitrile Gradients	Ultima-Flo M (#6013579)	Flo-Scint A (#6013569) Flo-Scint III (#6013539)
Aqueous Gradients (0.1–2 M)	Ultima-Flo AP (#6013599)	Flo-Scint II (#6013529)
0–2 M Ammonium Phosphate Gradients	Ultima-Flo AP (#6013599)	No recommendations
0–2 M Ammonium Formate Gradients	Ultima-Flo AF (#6013589) Ultima-Flo AP (#6013599)	No recommendations
Dilute Aqueous (0–0.1 M)	Ultima-Flo M (#6013579) Ultima-Flo AP (#6013599)	Flo-Scint II (#6013529) Flo-Scint III (#6013539)
Organic	No recommendations	Flo-Scint A (#6013569) Insta-Fluor Plus (#6013127)
Narrowbore/Microbore	Ultima-Flo M (#6013579)	Flo-Scint III (#6013539)

Sample Preparation Guide

This table provides an overview of the sequential steps necessary for optimum sample preparation for various types of applications. Data presented are typical for the indicated samples.

Sample: Biological Fluids	Procedural Steps #1	#2	#3
Blood	Add 1 mL mixture of Soluene-350: IPA[2] (1.1) to 0.1–0.4 mL blood.	Stand 2 h at 60 °C.	Add 0.2–0.5 mL 30% H_2O_2 dropwise with swirling.
	Add 1 mL SOLVABLE to 0.1–0.5 mL blood.	Stand 1 h at 60 °C.	Add 0.1 mL 0.1 M EDTA-Na_2 solution. Add 0.3–0.5 mL 30% H_2O_2 in aliquots.
Plasma or Serum	Add up to 1 mL plasma or serum to 10–15 mL of Ultima Gold.	Shake until clear.	
Red Blood Cells (RBC)	Add 1 mL Soluene-350:IPA mixture (1:1) to 0.2 mL RBC suspension.	Stand 1 h at 60 °C.	Add 0.2–0.5 mL 30% H_2O_2 dropwise with swirling.
	Add 1 mL SOLVABLE to 0.2 mL RBC suspension.	Stand 1 h at 60 °C.	Add 0.1 mL 0.1 M EDTA-Na_2 solution. Add 0.3–0.5 mL 30% H_2O_2 in aliquots.
Urine	Add up to 8 mL of urine to 12 mL of Ultima Gold LLT and shake vigorously.		
0.1 M Phosphate Buffered Saline (PBS)	Add up to 8 mL to 10 mL Ultima Gold LLT *or* up to 4 mL to 10 mL Ultima Gold or up to 10 mL to 10 mL Ultima Gold XR.		
Aqueous Proteinaceous Sample	Add 0.2 mL sample to 1 mL Soluene-350.	Swirl until clear.	Add 10 mL Hionic-Fluor.
	Add 0.2 mL sample to 1 mL SOLVABLE.	Swirl until clear or heat 30 min at 50 °C.	Add 10 mL Ultima Gold.
Sucrose Solutions	Add between 3 mL and 7 mL of 20–40% (w/v) sucrose to 10 mL Ultima Gold XR *or* add between 5 mL and 10 mL of 30–60% (w/v) sucrose to 10 mL Hionic-Fluor.		
Inulin Containing Fluids	Add 50 µL of inulin sample to 0.5 mL of Soluene-350 and swirl.	Add 10 mL of Hionic-Fluor.	
Trichloroacetic Acid (TCA) Supematant	Add up to 3 mL of up to 20% TCA supernatant to 10 mL of Ultima Gold LLT.	For concentrations over 20%, use Hionic-Fluor.	

Abbreviations:

[1]Tritium counting efficiency was determined on a PerkinElmer Tri-Carb Model 3100TR with 65% efficiency.

[2]IPA = Isopropanol

[3]TLC = Thin layer chomatogram

For detailed information on sample uptake for PerkinElmer's LSC cocktails for various types of aqueous and organic liquids, please refer to the individual product descriptions.

#4	#5	Recommended Sample Size	Expected $^{3}H^{1}$ Efficiency
Stand 15–30 min ambient. Cap tightly. Stand 30 min at 60 °C.	Add 10–15 mL Hionic-Fluor.	Up to 0.4 mL blood	20–30%
Stand 15–30 min ambient. Cap tightly. Stand 30 min at 60 °C.	Add 10–15 mL Ultima Gold.	Up to 0.5 mL blood	25–35%
		Up to 1 mL	30–40%
Stand 15–30 min ambient. Cap tightly. Stand 30 min at 60 °C.	Add 10–15 mL Hionic-Fluor.	Up to 0.2 mL RBC suspension	20–30%
Stand 15–30 min ambient. Cap tightly. Stand 30 min at 60 °C.	Add 10–15 mL Ultima Gold.	Up to 0.2 mL RBC suspension	25–35%
		Up to 8 mL	25–35%
		Up to 10 mL	30–40%
		Up to 0.2 mL	35–40%
		Up to 0.2 mL	35–40%
		Up to 10 mL	30–40%
		Up to 50 µL	40–50%
		Up to 3 mL	25–40%

Note: The PerkinElmer 307 Sample Oxidizer can easily be used to prepare up to 1–2 grams of any of the listed samples.

Sample: Biological Tissues	Procedural Steps #1	#2	#3
Homogenate	Add 0.2 mL of up to 10% tissue homogenate (in either water or 70% ethanol) to 3 mL of water.	Add 10 mL of Insta-Gel Plus.	Shake vigorously.
Coarse-Ground Tissue	Add 150 mg coarse-ground tissue to 2 mL Soluene-350 and swirl.	Stand for 3–5 h at 60 °C.	Add 10 mL Hionic-Fluor.
	Add 150 mg coarse-ground tissue to 2 mL SOLVABLE and swirl.	Stand for 3–5 h at 60 °C.	Add 10 mL Ultima Gold.
Bacteria and Cells	Add 1 mL of 8:2 Soluene-350:water to 5–7 mg of bacteria or cells.	Stand 2–4 h at 60 °C.	Add 10 mL Hionic-Fluor.
	Add 1 mL of SOLVABLE to 5–7 mg of bacteria or cells.	Stand 2–4 h at 60 °C.	Add 10 mL Ultima Gold.
Organs	Add 1 mL Soluene-350 per: Arteries: 30–100 mg Brain: 50–150 mg Cartilage: 20–55 mg Cornea: 40–160 mg Heart: 50–100 mg	Stand 2–4 h at 60 °C. Intestine: 80–100 mg Kidney: 50–100 mg Liver: 50–100 mg Muscle: 100–200 mg Nerve cells: 50–100 mg	Add 10 mL Hionic-Fluor. Pancreas: 50–110 mg Spleen: 50–140 mg Stomach: 50–100 mg Sinew: 50–150 mg
	Add 1 mL SOLVABLE per: Arteries: 30–100 mg Brain: 50–150 mg Cartilage: 20–55 mg Cornea: 40–160 mg Heart: 50–100 mg	Stand 2–4 h at 60 °C. Intestine: 80–100 mg Kidney: 50–100 mg Liver: 50–100 mg Muscle: 100–200 mg Nerve cells: 50–100 mg	Add 10 mL Ultima Gold. Pancreas: 50–110 mg Spleen: 50–140 mg Stomach: 50–100 mg Sinew: 50–150 mg
Feces	Add 0.1 mL water to 20 mg dried feces; rehydrate for 30 min.	Add 1 mL Soluene–350.	Stand 1–2 h at 50 °C. Add 1 mL IPA and mix. Stand 2 h at 50 °C.
	Add 0.1 mL water to 20 mg dried feces; rehydrate for 30 min.	Add 1 mL SOLVABLE.	Stand 1–2 h at 50 °C. Add 1 mL IPA and mix. Stand 2 h at 50 °C.
TLC[3]-Scrapings	Add water-soluble sample on TLC silica to 1 mL of H_2O.	Stand 3–5 h at 40 °C. Add 8–10 mL of Insta-Gel Plus.	Note: If samples are not water soluble, add 1 mL of Soluene-350 instead of H_2O.
Polyacrylamide Gel Slices (PAGE)	Add 1–2 mm gel slice to 0.5 mL Soluene-350.	Stand for 3 h at 50 °C.	Add 10 mL Hionic-Fluor.
	Add 1–2 mm gel slice to 0.5 mL SOLVABLE.	Stand for 3 h at 50 °C.	Add 10 mL Ultima Gold.
TCA Precipitates	Moisten 100 mg of dried TCA precipitate (proteinaceous) with 0.1–0.2 mL water.	Rehydrate for 30 min.	Add 1 mL Soluene-350 and stand 30 min ambient.
	Moisten 100 mg of dried TCA precipitate (proteinaceous) with 0.1–0.2 mL water.	Rehydrate for 30 min.	Add 1 mL SOLVABLE and stand 30 min ambient.
Filters (Cellulose acetate only)	Place filter on bottom of vial. Rehydrate with 0.1–0.2 mL H_2O.	Add 0.5–1.0 mL Soluene-350. Stand for 30 min ambient.	Add 10 mL Hionic-Fluor.
	Place filter on bottom of vial. Drying wet filters is not required.	Add 5–10 mL Filter-Count. Shake several times until filter is dissolved and count.	

Abbreviations:

[1]Tritium counting efficiency was determined on a PerkinElmer Tri-Carb Model 3100TR with 65% efficiency.

[2]IPA = Isopropanol

[3]TLC = Thin layer chomatogram

#4	#5	Recommended Sample Size	Expected $^{3}H^{1}$ Efficiency
	Note: Homogenates can also be prepared as for coarse-ground tissue.	Up to 0.2 mL of 10% tissue homogeneate	30–40%
		Up to 1.0 mL of 10% tissue homogenate. Up to 150 mg coarse-ground tissue.	35–40%
		Up to 1.0 mL of 10% tissue homogenate. Up to 150 mg coarse-ground tissue.	35–45%
		5–7 mg of bacteria or cells	20–30%
		5–7 mg of bacteria or cells	35–45%
		See Steps 1, 2 and 3.	17–40%
		See Steps 1, 2 and 3.	30–45%
Add 0.2 mL of 30% H_2O_2 dropwise with swirling.	Stand 10 min ambient; add 10 mL Hionic-Fluor.	Up to 20 mg dried feces	25–35%
Add 0.2 mL of 30% H_2O_2 dropwise with swirling.	Stand 10 min ambient; add 10 mL Hionic-Fluor.		30–40%
Stand 3–5 h at 40 °C. Add 10 mL of Hionic-Fluor.			30–40%
		1–2 mm gel slice	45–50%
		1–2 mm gel slice	50–55%
Add 10 mL Hionic-Fluor.		Up to 100 mg	35–40%
Add 10 mL Ultima Gold.		Up to 100 mg	40–50%
			50–55%
			35–45%

Note: The PerkinElmer 307 Sample Oxidizer can easily be used to prepare up to 1–2 grams of any of the listed samples.

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