

Liquid Scintillation Supplies

BetaMax™ ES

Maximum Efficiency LSC Cocktail for Nonaqueous Samples !



BetaMax™ ES, as its name implies, is the most efficient environmentally safe LSC cocktail for beta particle counting in non-aqueous samples. BetaMax™ ES is an environmentally safe, biodegradable, non-toxic, and non-flammable product designed to work well with most non-aqueous samples, sample dried on solid supports, and organic samples extracted from aqueous mixtures.

It is excellent for samples completely dried that have been recovered on filters of all types. Some membrane filters can be dissolved in 1-2 ml of methyl cellosolve which can be mixed with 10-15 ml of BetaMax™ ES for optimum recovery. Free lipids and steroids can be extracted from an aqueous sample by simply adding the aqueous sample to the BetaMax™ ES and allowing the organic soluble components to migrate across the partition. This usually occurs in approximately 30 minutes at room temperature (the time required to adapt samples to darkness).

Special Characteristics - BetaMax™ ES is non-flammable having a flash point of 150°C (300°F). It is safe for transportation, storage, use, and disposal. It is relatively odorless and may be used as the solvent and scintillator for preparing "home-made" cocktails. If you intend to use BetaMax™ ES with your own choice of surfactant, reduce the percentage of surfactant by approximately 5% in your recipe. It does not diffuse into or through polyethylene plastics vials, thereby, eliminating the vial wall diffusion effect as a source of erroneous external standard calculations.

Organic Sample Solubility:

Sample	Soluble
Acetone	Yes
Acetic Acid	Yes
Acetonitrile	Yes
Benzene	Yes
Benzyl Alcohol	Yes
Chloroform	Yes
DMSO	No
Ethyl Acetate	Yes
Ethylene Glycol	No
Heptanol	Yes
Methanol	No
Methyl Cellosolve	Yes
n-Propanol	No
Pyridine	Yes
THFA	Yes
Toluene	Yes

Cat. No.	Description	Qty.	Price
880020	BetaMax™ ES*	1 gal.	99.20
		2 gal.	131.40
		4 x 1 gal.	259.10
		5 gal.	275.40

For assistance in selecting a biodegradable liquid scintillation cocktail suited to your particular needs, please call ICN Technical Service. Detailed literature on all ICN biodegradable liquid scintillation cocktails may be obtained from the Customer Service department.

*ICN liquid scintillation cocktails are environmentally safe in accordance with EPA regulations (Resources Conservation and Recovery Act, Title 40, CFR 260-263).

Liquid Scintillation Supplies

CytoScint™ ES

Highest Tritium Performance !



- Environmentally Safe
- Biodegradable
- Non-Toxic and Non-Flammable
- One Step Filter Counting
- Ideal for Small Volume Aqueous Samples
- Stable Counting Performance
- High Quench Resistance
- No Waiting on Chemiluminescence

CytoScint™ ES is a complete, ready-to-use environmentally safe liquid scintillation solution designed for "one-step" counting of filters, Thin-Layer Chromatography scrapings, and samples solubilized in Hyamine Hydroxide®. For most samples containing minimal amounts of water (0-15%), CytoScint™ ES will result in increased count recovery and maximum sample solubilization.

It works in a special way to allow most samples collected on solid supports to be counted in one, easy step, without the necessity of pretreatment. The presence of small amounts of water will actually enhance the solubilization of most samples in CytoScint™ ES.

Wet filters and thin-layer chromatography scrapings should be placed in a vial containing 5-10 ml of CytoScint™ ES. Shake or allow the solution to stand until it clears. If the solution remains unclear after a few minutes, increase the amount of cocktail. Generally, 10 ml of CytoScint™ ES will solubilize up to 15% of aqueous sample resulting in a homogeneous counting solution.

Tissue solubilizers such as hyamine hydroxide® can be counted in CytoScint™ ES, which is specially formulated to resist chemiluminescence. After digesting the sample, cool and de-color (if necessary). Then add 10-15 ml of cocktail, shake until thoroughly mixed and let the solution stand for 30 minutes before counting.

Precipitates (I.e. double antibody complex) may be solubilized in dilute NaOH or Hcl and then added to CytoScint™ ES for high counting efficiency.

Special Characteristics - CytoScint™ ES is a safe, virtually odor-free cocktail which eliminates the need for special handling or storage. CytoScint™ ES can be used with polyethylene vials without the loss of sample due to diffusion, often a problem with conventional cocktails.

Cat. No.	Description	Qty.	Price
882453	CytoScint™ ES	1 gal.	99.20
		2 gal.	120.10
		4 x 1 gal.	259.10
		5 gal.	292.15

Liquid Scintillation Supplies

EcoLite(+)TM

An All-Purpose Liquid Scintillation Cocktail !



- Environmentally Safe
- Biodegradable
- Non-Toxic and Non-Flammable
- Ready-To-Use
- Versatile
- Excellent Stability for RIA and Receptor Assays
- Forms No Gel or Phasing

EcoLite(+)TM is a unique formulation of environmentally safe, non-toxic, and biodegradable media possessing exceptional water and salt holding characteristics. Difficult to count RIA samples, basic samples, phosphate buffer samples, and biological fluids can be counted using EcoLite(+)TM, with maximum solubilization resulting in stable counting solutions. Tritium and ¹⁴C counting efficiency of these samples is exceptionally high.

EcoLite(+)TM is a new generation environmentally safe liquid scintillation cocktail that can be used for virtually all aqueous and non-aqueous samples. It is particularly useful for HPLC fractions, urea, phosphate buffers, protein digests, urine and many other applications where conventional cocktails fail to provide homogeneous counting solutions.

EcoLite(+)TM remains monophasic from 0-30% load capacity. Samples are counted by simply adding them to 10-15 ml of EcoLite(+), shaking until clear and counting. NOTE: Temperature and salt concentration will affect sample solubility, as well as, the physical characteristics of a surfactant based cocktail. It is recommended that the

counting temperature be considered when determining the proper sample to cocktail ratio. Where phase separation occurs increase the amount of EcoLite(+)TM or dilute with small amounts of distilled water until the sample clears and remains at the desired counting temperature.

Special Characteristics - EcoLite(+)TM is extremely efficient with both ³H and ¹⁴C samples. It is very fluid, easily pipetted and mixed without time delays of foaming. It will not form gels or phasing upon addition of sample up to the maximum load capacity. EcoLite(+)TM does not diffuse into or through polyethylene vials, thereby eliminating erroneous external standard quench measurements due to the vial wall diffusion effect. It has an extremely low vapor pressure which minimizes volatiles and odors under normal laboratory use. It works well with sodium hydroxide samples up to 0.5 N.

(in 10 ml)	Sample Volume	Tritium Efficiency
Water	0	49.8%
(distilled)	0.1 ml	47.9%
Clear physical appearance	0.5 ml	45.6%
	1.0 ml	43.7%
	1.5 ml	41.4%
	2.0 ml	40.2%
	3.0 ml	37.5%
	4.0 ml	35.1%
	5.0 ml	33.5%

NaOH	0.1 ml	46.7%
(0.5 N)	0.5 ml	44.1%
Clear after	1.0 ml	42.0%
30-60 seconds	1.5 ml	40.5%
	2.0 ml	39.2%

Sucrose	0.1 ml	46.5%
Dilute with 5%	0.5 ml	43.1%
distilled water	1.0 ml	41.5%
	1.5 ml	40.0%
	2.0 ml	39.8%

Urine	0.1 ml	46.5%
Clear physical	0.5 ml	40.0%
	1.0 ml	36.3%
	1.5 ml	33.4%
	2.0 ml	30.1%

Cat. No.	Description	Qty.	Price
882475	EcoLite(+) TM	1 gal.	110.25
		2 gal.	141.30
		4 x 1 gal.	292.15
		5 gal.	358.30

Liquid Scintillation Supplies

EcoLume™

For Large Aqueous Samples !



EcoLume™ is a non-toxic, non-hazardous, non-flammable biodegradable liquid scintillation counting solution. Using EcoLume™ eliminates other toxic cocktails from your laboratory. At the same time, you make a commitment to reduce waste from our environment.

EcoLume™ is a complete, ready-to-use liquid scintillation cocktails for virtually all aqueous and organic samples, such as deionized water, phosphate buffered saline, PBS with gelatin or BSA, sucrose gradients, salt solution, 0.1 N HCl, 0.1 NaOH, urine, serum, alcohols, acetonitrile, steroids, lipids, polyacrylamide gels, cellulose, acetate strips, glass fiber filters, silica gels, thin-layer chromatography extracts, and more. For 90% of all applications, EcoLume™ will perform as well as or better than your current liquid scintillation cocktail without the hazards and toxic waste of other cocktails.

Special Characteristics - EcoLume™ has been formulated for your laboratory. It is non-toxic, odorless and does not require any respiratory protection or ventilation. It forms no gel or phasing with the addition of sample up to the maximum load capacity, even with the addition of aqueous sample exceeding 30% by volume at room temperature.

Sample	Capacity**	Appearance	Tritium Efficiency
water	0-50%	Clear	44-28%
0.1 N HCl (in normal saline)	0-30%	Clear	42-27%
0.5 N HCl	0-40%	Clear	42-26%
1.0 N HCl	0-30%	Clear	42-25%
1 M CaCl ₂	0-30%	Clear	40-25%
1 M MgCl ₂	0-30%	Clear	42-28%
0.1 N NaOH	0-40%	Clear	42-28%
0.5 N NaOH	0-15%*	Cloudy	40-25%
0.1 N NaOH (in normal saline)	0-40%	Clear	42-28%
PBS	0-30%	Clear	42-30%
Methanol	0-50%	Clear	42-25%
8 M Urea	0-20%	Clear	40-30%
Urine	0-20%	Clear	42-35%
Tetra- fluoroacetic Acid	0-25%	Clear	43-30%
2 N CsCl	0-15%*	Clear	43-30%
20%	0-25%	Clear	43-30%
Sucrose			
Tetrapropylammonium Hydroxide	40%	Clear	43-28%

*Distilled water required. A 1:1 ratio forms a clear solution to 30% load capacity.

**Load capacity is the volume of sample expressed as a percentage of the volume of EcoLume™ into which the sample has been added.

Using EcoLume™ can eliminate as much as 90% of all current liquid scintillation hazardous waste over conventional cocktails.

Cat. No.	Description	Qty.	Price
882470	EcoLume™	1 gal.	110.25
		2 gal.	156.00
		4 x 1 gal.	292.15
		5 gal.	358.30



Labware

Liquid Scintillation Supplies

Universol™ ES

Traditional Dual Phase Cocktail !



Labware

- Environmentally Safe
- Biodegradable
- Non-Toxic and Non-Flammable
- Multi-Use for Aqueous Samples
- High Tritium Efficiency
- Both Clear and Translucent Gel Phases

Universol™ is a very efficient environmentally safe, non-toxic, biodegradable liquid scintillation cocktail of the "gelling" variety. The physical characteristics of Universol™ ES are identical to traditional "Triton and Toluene" type commercial cocktails. Aqueous samples from 0-15% load capacity count as a clear solution. Samples with high ionic concentrations will count most efficiently in this region. From approximately 20% to near 40% load capacity, Universol™ ES becomes a translucent gel, useful in suspending particulate samples or samples that phase due to salt concentration or molecular size.

Universol™ ES has been formulated to work over a wide variety of laboratory counting requirements. Several of these requirements are listed in the table below. NOTE: high concentrations of salt, protein, and sucrose will affect the sample solubility, as well as, the physical characteristics of a surfactant cocktail. By diluting Univesol™ ES with distilled water, usually from 2-5% by volume, these concentrated solutions which would normally precipitate can be counted as clear homogeneous solutions.

Sample	Sample Volume (ml)	Sample % by Volume	Physical Appearance	Tritium Efficiency
Water	0	0	Clear	49%
	0.5	4.8	Clear	47.5%
	1.0	9.1	Clear	42.9%
	2.5	20	Gel	40.3%
	5.0	33.3	Gel	37.0%
HCl (0.5 M)	0.5	4.8	Clear	40%
	1.0	9.1	Clear	37.1%
	2.0	16.7	Gel	35.9%
NaCl (0.5 M)	0.5	4.8	Clear	46.2%
	1.0	9.1	Clear	42.0%
	2.5	20.0	Gel	38.4%
NaOH (0.25 M)	0.5	4.8	Clear	44.0%
	1.0	9.1	Clear	42.0%
	2.0	16.7	Clear	38.2%
	2.5	20.0	Clear	36.9%
Sucrose, 20%	0.5	4.8	Clear	47.5%
	1.0	8.1	Clear	45.8%
	1.5	13.0	Clear	43.5%
	2.0	16.7	Clear	38.6%
Sodium Phosphate (0.1 M, 1% gelatin, pH 7.5)	0.5	4.8	Clear	47.0%
	1.0	8.1	Clear	42.9%
	1.5	13.0	Clear	39.8%
	3.0	23.0	Gel	36.2%
CsCl (2 N)	0.5	4.8	Clear	43.0%
	1.0	9.1	Clear	36.5%
Urea* (8 M)	0.5	4.8	Clear	45.5%
	1.0	9.1	Clear	43.5%
	2.0	16.7	Gel	38.6%
Urine	0.5	4.8	Clear	45.0%
	1.0	9.1	Clear	41.7%
	3.0	23.0	Gel	32.4%

*Samples where the addition of 2-5% water (v/v) will enhance solubility.

Other aqueous sample types have been tested and found suitable as well.

Cat. No.	Description	Qty.	Price
882480	Universol™	1 gal.	99.20
		2 gal.	138.70
		4 x 1 gal.	286.65
		5 gal.	341.75

To place an order: (800) 854-0530, fax (800) 334-6999
Outside of the U.S.: (714) 545-0100, fax (714) 557-4872

1530

www.icnbiomed.com
E-Mail: sales@icnbiomed.com

Liquid Scintillation Supplies

Non-Biodegradable Liquid Scintillation Alternatives

Aqua Mix™

- Economic Aqueous Cocktail
- General Purpose Use

An economical, ready-to-use scintillation cocktail for aqueous samples. Aqua Mix™ holds 20% water at ambient temperatures without forming a gel. Aqua Mix™ is designed for use in general purpose counting. Simply add any sample to a 10-15 ml of Aqua Mix™, shake until clear, and then count.

Cat. No.	Description	Qty.	Price
882468	Aqua Mix™	1 gal.	71.65
		4 x 1 gal.	259.10
		5 gal.	308.70

Beta Blend™

- For Miniature Vial Systems
- High Efficiency
- Most Economical

Beta Blend™ is a monophasic, complete, ready-to-use liquid scintillation solution designed for use in miniature vial systems containing aqueous samples. It is a unique and proprietary formulation of solubilizers and fluors in a classified, non-flammable organic solvent.

Beta Blend™ is ideal for RIA samples, liquid chromatographic effluents, and highly buffered solutions., as well as, where HPLC flow detection is utilized. A 5 ml amount of Beta Blend™ is sufficient for most sample types including plasma, serum, 10% sucrose, 0.05M Tris-HCl, 0.1M TCA, urine, water, 0.1M HCl, 0.2M NaCl, 0.1M NaOH, and 0.1M PBS.

Cat. No.	Description	Qty.	Price
882450	Beta Blend™	1 gal.	88.20
		4 x 1 gal.	286.65

BetaMax™

- For Counting Organic Samples
- Replacement for Toluene PPO Cocktail
- Can Be Used with Tritium X-100®

BetaMax™ is a pre-mixed, ready-to-use alkyl-benzene solution which can accommodate virtually all non-aqueous samples. The concentration of fluors, PPO, and bis-MSB, dissolved in scintillation grade alkyl-benzene solvents have been optimized through repeated laboratory trials to assure excellent counting efficiency and quench resistance. Homogeneity and batch-to-batch consistency are achieved through rigid quality control. Tritium efficiencies up to 58% are readily attainable. Neutralized tissue digests of 1-2 ml per 10-15 ml of Beta Max™ reduce absolute tritium counting efficiencies by only 4.6%. Tissue and gel solubilizers are also compatible with BetaMax™.

Cat. No.	Description	Qty.	Price
880015	BetaMax™	1 gal.	60.65
		4 x 1 gal.	187.40

CytoScint™

- One-Step Counting of Wet Filters
- No Waiting on Chemiluminescence
- High Flash Point
- Low Vapor Pressure
- Stable Counting Performance
- High Quench Resistance

CytoScint™ is a complete, ready-to-use liquid scintillation solution designed for "one-step" counting of wet filters, thin-layer chromatography scrapings, and samples that have been solubilized in quaternary amines. For most samples containing minimal amounts of water, CytoScint™ will result in increased count recovery and maximum sample solubilization. It is a unique and proprietary formulation of solubilizers and fluors in a classified, non-flammable organic solvent.

CytoScint™ performs in a special way to allow samples collected on solid supports to be counted in one step, without the necessity of drying. The presence of water will actually enhance the solubilization of the sample in CytoScint™ without decreasing efficiency.

Cat. No.	Description	Qty.	Price
882465	CytoScint™	1 gal.	99.20
		4 x 1 gal.	281.15

Liquid Scintillation Supplies

Universol™

Universol™ is a ready-to-use liquid scintillation cocktail specially formulated to accommodate a broad range of aqueous samples of acids, bases, salts, and various gradients. It is superior to other scintillation media in mixability and quench resistance and is compatible with large volumes of water.

Typical counting efficiencies with Universol™ are high and range from 20-45% for tritium and 70-90% for ¹⁴C. Low energy gamma emitters, such as ¹²⁵I can also be efficiently counted with Universol™.

With increasing aqueous loading, the physical characteristics of Universol™ change from a clear solution to a gel. With 0-16% (v/v) aqueous loading, it presents a clear phase at ambient and refrigerated temperatures. A two phase region, unstable for counting, exists from 16-22% loading, and a stable gel, ideal for suspending samples, exists from 22-50% loading. The researcher can merely add a small amount of water and Universol™ to the unstable two-phase sample and achieve a countable sample. It has proven performance over a broad spectrum of liquid scintillation applications.

A clear liquid single-phase exists when adding up to 1.9 ml of distilled water to 10 ml (>16%) of Universol™. At that point, it becomes a two-phase unstable system which cannot be counted. This two-phase unstable area exists up to 2.5 ml of distilled water per 10 ml (20%) of translucent gel is a countable area for the cocktail. These volumes are at ambient temperatures (25°C).

Cat. No.	Description	Qty.	Price
882462	Universol™	1 gal.	99.20
		4 x 1 gal.	325.25

Primary and Secondary Scintillators

Liquid scintillation counting is an analytic technique that requires high purity reagents. Impurities that add or subtract from the counting efficiency of the scintillation system are intolerable. The below listed reagents are "scintillation grade", so that maximum results are achieved.

802399 RT	DIMETHYL POPOP	5 g	23.40
	(1,4-bis[2]4-Methyl-5-phenyloxazole	10 g	41.30
	benzene)	50 g	170.90
	Scintillation Grade	100 g	281.15
	Maximum Fluor. 4,300		

802374 RT	PPO	25 g	23.20
	(2,5-Diphenyloxazole)	100 g	71.65
	Scintillation Grade	500 g	330.75
	Maximum Fluorescence 3,800.		

Solubilizers and Gelling Agents

Hyamine Hydroxide® is used to trap CO₂ and as a solubilizer for biological tissue and polyacrylamide gel slices. Purified Triton X-100® is used for emulsifying water in toluene scintillation formulations and for suspending tissues.

Crystal Fluor (PPO-Bis MSB™) is a precisely blended crystalline mixture of bis-MSB (2%), PPO (98%). Bis-MSB is readily soluble, highly efficient spectrum shifter which is superior in quench resistance to POPOP and dimethyl-POPOP. PPO-Bis MSB™ offers storage convenience and economy and is ideal for the intermittent liquid scintillation cocktail user since he need only mix enough for his current use. One liter of counting solution can be made by merely adding 4 g of PPO-Bis MSB to 1 liter of scintillation grade toluene (or p-xylene for higher counting efficiency). Aqueous samples are counted in a mixture of 8 g of PPO-Bis in 1 liter of scintillation grade p-dioxane.

Chem Fluor I (Concentrated PPO-POPOP™) is a toluene based liquid scintillation concentrate containing 1.25 g of POPOP and 100 g of PPO per liter of toluene. With Chem Fluor I, large volume liquid scintillation users have the advantage of reduced storage, increased economy, and the elimination of potential weighing and compounding errors. One liter of Chem Fluor I makes 25 liters of a standard counting solution

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using toluene as the solvent. p-Xylene may be substituted for increased efficiency. Each batch of Chem Fluor I is tested and standardized in our own facility to assure batch-to-batch consistency. Care should be taken in storage, since tightly sealed bottles will retain their counting characteristics for a minimum of one year.

Cat. No.	Description	Qty.	Price
802387	Hyamine Hydroxide™	500 ml	269.85
807423	Triton X-100®	100ml	17.00
807426		500ml	20.50
882419	Crystal Fluor	25 g	30.30
		100 g	93.70
		500 g	.00
882427	Chem Fluor I	1 L	121.25
		4 L	303.20

Scintillation Vials



- Polypropylene
- Two Cap Styles
- Versatile
- Two Cap Colors
- Volume: 5 ml

Cat. No.	Description	Qty.	Price
159511	Vial w/Tall White Stopper	1000/cs	54.95
159541	Vial w/Tall Yellow Stopper	1000/cs	54.95
159512	Vial w/Short White Stopper	1000/cs	54.95
159540	Vial w/Short Yellow Stopper	1000/cs	54.95

Cat. No.	Description	Qty.	Price
159513	Scintillation Vial w/o stopper	1000/cs	44.90
159514	Short White Vial Stopper	1000/cs	18.80
195595	Short Yellow Vial Stopper	1000/cs	18.80
195597	Tall White Vial Stopper	1000/cs	18.80
195596	Tall Yellow Vial Stopper	1000/cs	18.80

Universal Repipet II Dispenser

Liquid Scintillation Fluid Dispenser for all ICN LSC containers reducing spillage and eliminating overpouring. Range: 0-20 ml.

Cat. No.	Description	Qty.	Price
802510	Universal Repipet II Dispenser	1 each	297.65