

SOLVABLE™ - Solubilization Protocols and Performance

A review of the literature reveals the safer nature of SOLVABLE when compared to other solubilization procedures and products that are available in today's market.

1. SOLUBILIZATION PROTOCOLS

Whole Human Blood:

1. In a glass vial, add equal volumes of SOLVABLE and whole blood up to a maximum blood sample of 0.5 mL.
2. Incubate samples for one hour at 50°C in a shaking water bath. Appearance will change from red to brown.
3. Add 0.1 mL of 100 mM (EDTA)Na₂ to each vial. This will help reduce foaming which occurs upon the addition of peroxide.
4. To decolorize, add 0.3 mL of 30% H₂O₂ to each vial and cap **loosely**. It is advisable to add the peroxide in 0.1 mL aliquots, otherwise excess foaming may occur.
5. Incubate for one hour at 50°C. Appearance will change from brown to green to magenta to light yellow.
6. Cool the samples and add 10-15 mL of Ultima Gold™.
7. Light and temperature adapt for at least one hour prior to counting.

Polyacrylamide Gels:

Note: This is an elution method; the gels will not dissolve. The radioactive species are extracted from the gel and subsequently mixed into the scintillation cocktail.

1. Place the piece of gel containing the radioactive band of interest into a glass scintillation vial and add 0.5 mL of water.

Note: If the gel piece has been dried, allow the gel to rehydrate for approximately 15-30 minutes; heat at 50°C if necessary.

2. Add 0.5 mL SOLVABLE. Be sure the gel piece is free floating for best results.
3. Incubate the samples at 50°C for three hours. The gel will swell during this step.
4. Cool the samples and add 10 mL of cocktail such as Ultima Gold and vortex. Neutralize the samples with acid if necessary. As the radioactive species are eluted out of the gel, the gel will collapse.
5. The samples may be counted immediately with consistent results, however for maximum recovery, allow the samples to sit overnight at room temperature. Occasional vortexing will speed diffusion. Vortex samples well before counting.

Glass Fiber Filters:

Note: Glass fiber filters cannot be digested by tissue solubilizers, however they are UV transparent when wet.

1. Add 1.0 mL of SOLVABLE to the filter in a glass scintillation vial.
2. Incubate at 50°C for 30 minutes.
3. Cool the samples and add 10 mL of cocktail such as Ultima Gold, mix well and count. Neutralize samples with acid if necessary.



Tissue Solubilization:

SOLVABLE can easily dissolve samples up to 300 mg in approximately two to four hours (sample size dependent). The following procedure was developed using liver tissue as a representative highly colored sample. The protocol may need some modification for other tissue types. For example, brain tissue usually dissolves faster and decolorization may be optional.

1. Add SOLVABLE to the minced, fresh tissue sample in a glass scintillation vial using the following guideline:

Note: It is important that the tissue sample be fully immersed. Gently agitate the sample from time to time; do not vortex, as pieces of the tissue will adhere to the walls of the scintillation vial.

Tissue Weight	SOLVABLE Volume
< 50 mg	0.5 mL
< 200 mg	1.0 mL
< 300 mg	

2. Incubate at 50°C until clear - approximately three hours.
Note: if the tissue has a high fat content, some particulate material will remain until the cocktail is added.
3. Decolorization (optional and tissue dependent): hydrogen peroxide is the recommended bleaching agent, however foaming may be a problem.
4. Add 0.1 - 0.2 mL of 30% H₂O₂ to each vial and let sit for one hour at 50°C. NOTE: If greater than 0.2 mL of peroxide is necessary, add in aliquots to prevent excessive foaming.
5. Cool the samples and add 10 - 15 mL of cocktail such as Ultima Gold to each vial. Samples greater than 150 mg may require up to 15 mL of cocktail to clear.
6. If decolorization has been implemented, light and temperature adapt for at least one hour prior to counting.

SOLVABLE™ - Solubilization Protocols and Performance

2. SOLUBILIZER COMPARISON

Characteristics	SOLVABLE	Soluene®-350
Solvent Base	Water	Toluene
Cocktail Needed	Emulsifier	Organic or Emulsifier
Classification	Irritant	Corrosive/Flammable
Flash point	Not applicable	5°C

Solubilizer	Suitable Cocktails
SOLVABLE	Ultima Gold, Hionic-Fluor™, Opti-Fluor™, Pico-Fluor™ 40
Soluene-350	Hionic-Fluor, Pico-Fluor 40, Ultima Gold

Sample	Solubilizing Performance
Tissue	SOLVABLE and Soluene-350 comparable
Blood	SOLVABLE better than Soluene-350
Liver	SOLVABLE better than Soluene-350
Plant Material	Soluene-350 better than SOLVABLE (small sample sizes (<50mg) only)
Glass fiber filters	SOLVABLE and Soluene-350 comparable
PAGE gels	SOLVABLE and Soluene-350 comparable

Typical Background Decay from 10 mL Ultima Gold + 1 mL Solubilizer

Time	SOLVABLE CPM	Soluene-350 # CPM
3 min.	32	20
15 min.	21	19
30 min.	19	20

Soluene-350 (Part No.60030381 x 500mL)

For all your solubilizing needs SOLVABLE offers the safer alternative:

SOLVABLE is not classified as flammable.

SOLVABLE has flash point of >>150°C.

SOLVABLE is equivalent to Soluene-350 in solubilizing properties.

Ordering Information:

SOLVABLE
500 mL Ord. no. 6NE9100

SOLVABLE is compatible with modern safer cocktails such as Ultima Gold.

SOLVABLE can be used and handled without the need for a fume hood.

SOLVABLE is easier to dispose of since it does not contain flammable solvents.

SOLVABLE does not require special storage

3. ALTERNATIVE TECHNOLOGY ... PACKARD MODEL 307 & 387 SAMPLE OXIDIZERS

The Packard family of sample oxidizers, models 307 and 387, were developed as alternatives to solubilization of biological, environmental and industrial samples for liquid scintillation analysis. The model 387 offers robotic automation of model 307, with a sample handling capacity of 80 for high throughput. The sample oxidation technique is used for ³H and ¹⁴C single or dual labeled samples and offers the following advantages:

³H and ¹⁴C components of the sample are collected in separate vials for easier analysis.

Up to 1300°C flame temperature for complete sample combustion. Better than 97% recoveries possible.

Up to 1.5 gram samples

No chemiluminescence interference

No color quenching

Visit Packard on the Internet: <http://www.packardinstrument.com>



Packard BioScience BV, Rigaweg 22, 9723 TH Groningen, The Netherlands
Tel: +(31)-50-5445900, Fax: +(31)-50-5445950
Email: info@packard-bioscience.nl

Packard Instrument Company, 800 Research Parkway, Meriden, CT 06450 U.S.A.
Tel: 203-639-2598, Toll free: 1-800-856-0734, Fax: 203-639-2172
Email: webmaster@packardinstrument.com

Packard International Offices:

Australia, Mt Waverley +(61)-3-95434266; **Austria**, Vienna +(43)-1-2702504; **Belgium**, Brussels +(32)-2-4818530; **Canada**, Ontario +(1)-905-6738028 or 1-800-387-9559; **Central Europe, Schwadorf, Aus.** +(43)-2-23037000; **Denmark**, Greve +(45)-43-909023/7151; **France**, Rungis +(33)-1-46862775; **Germany**, Dreieich +(49)-6103-385151; **Italy**, Milano +(39)-02-33910796; **Japan**, Tokyo +(81)-3-38665850; **The Netherlands**, +(31)-50-5491296; **Russia**, Moscow +(7)-095-7880934/35; **Switzerland**, Zurich +(41)-1-4816944; **United Kingdom**, Pangbourne, Berks. +(44)-118-9844981