

Gold Star LT²



What is Gold Star LT² ?

Gold Star LT² was developed to measure **Low Tritium** levels at **Low Temperature**.

Gold Star LT² accepts up to 12 ml water in 10 ml cocktail with Tritium counting efficiencies approaching 28%. At 10 ml water in 10 ml cocktail, using optimised windows and low level count mode, **Gold Star LT²** provides MDA's approaching 1.4 Bq/Lt.

Perkin Elmer TriCarb 2250

Operated at 12°C (standard chill pack); Low Level Count Mode; all samples in duplicate; 500 minute count time (5 x 100 minutes); 20 ml glass vials.

Water: Cocktail ratio	Cocktail	Optimised Window (0.5-4.5 keV)				MDA (Bq/Lt)
		% ³ H Eff	Bkg	E ² /B	E ² V ² /B	
8 ml : 12 ml	Gold Star LT ²	33%	3.1 cpm	351	22,482	1.19
10 ml : 10 ml	Gold Star LT ²	28%	3.2 cpm	245	24,500	1.43
11 ml : 9 ml	Gold Star LT ²	25%	3.2 cpm	195	23,630	1.60

Wallac 1220 Quantulus

Operated at 18°C; dark adapted for 12 hours; 600 minute count time (10 x 60 minutes); standard 3H windows (5-170); 20 ml polyethylene vials.

Cocktail	Water	Water: Cocktail ratio	CPM (5 - 170)
Gold Star LT ²	MQ	10 ml : 10 ml	0.84 ± 0.04
Gold Star LT ²	Dead water	10 ml : 10 ml	0.84 ± 0.04

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Gold Star LT² is used to determine low levels of Tritium in different water samples and provides a stable counting system for all loadings at temperatures down to 12°C.

	10°C	12°C	14°C	16°C	18°C	20°C
Deionised water	12.0 ml	12.0 ml	12.0 ml	12.0 ml	12.0 ml	12.0 ml
Tap water	12.0 ml	12.0 ml	12.0 ml	12.0 ml	12.0 ml	12.0 ml
Mid ocean Sea water	12.0 ml	12.0 ml	8.5 ml	7.0 ml	5.0 ml	4.0 ml

Gold Star LT² also accepts other aqueous based samples, including mineral acids at concentrations ranging from <0.1M up to 4M. This sample acceptance capability, combined with the fact that it is based on DIN solvent make it ideally suited to alpha/beta counting.

Sample	Uptake/10ml Gold Star LT ² @ 20°C
0.01M PBS	9.50 ml
0.1M PBS	5.5 ml
0.5M PBS	<0.25 ml
1.0M PBS	<0.25 ml
0.15M NaCl	9.50 ml
0.5M NaCl	6.0 ml
0.05M Tris-HCl	10.0 ml
0.2M NaH ₂ PO ₄	5.0 ml
0.25M CH ₃ COONH ₄	7.0 ml
0.1M NaOH	10.0 ml
1.0M NaOH	<0.25 ml

Sample	Uptake/10ml Gold Star LT ² @ 20°C
0.1M HCl	8.5 ml
Urine	6.0 ml
1.0M H ₃ PO ₄	10.0 ml
2.0M H ₃ PO ₄	4.5 ml
4.0M H ₃ PO ₄	3.0 ml
1.0M HNO ₃	4.5 ml
2.0M HNO ₃	2.5 ml
4.0M HNO ₃	2.5 ml
1.0M HCl	10.0 ml
2.0M HCl	3.5 ml
4.0M HCl	2.5 ml

Gold Star LT² is packaged in 1 Lt and 2.5 Lt aluminium containers. This prevents potential contamination from airborne Tritium which can penetrate plastics. It also eliminates potential isotopic contamination from prolonged contact with glass bottles. Dispensers such as the Brand Dispensette III can be attached directly to these aluminium containers without the use of an adaptor.

Gold Star LT² features:

- Low background contribution
- High capacity for water samples
- Stable at temperatures down to 10°C
- Compatible with urine samples
- Suitable for use with samples in mineral acids up to 4M concentration
- Ideal for alpha / beta counting
- Packaged in aluminium containers to preserve background integrity
- No diffusion through plastic vials
- High flash point of ~ 140°C

Ordering Information

Gold Star LT²

2.5 Litres..... GSLT2