ZINSSER ANALYTIC

LIQUID SCINTILLATION

Liquid Scintillation

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Printer: Druckerei GRAPHIA-HUSS, Frankfurt

Many advances have been made over the years in scintillation counters and in cocktail development. The Zinsser Analytic range of safe scintillators is formulated using a solvent which is non toxic, biodegradable, odourless and has a flash point above 150°C. As well as being highly effective scintillators they are also pleasant to use and safe for storage and transport. Our range also includes liquid scintillators for flow cell applications. The Quickszint flow scintillators are for mu lated to count HPLC gradients such as acetonitrile/ water as well as buffer solutions and pure solvents.

Zinsser Analytic have manufactured Polyvials® (20 ml) and MINIS® plastic counting vials for many years. We also supply high quality glass vials from Wheaton Science Products and a Scintillation Counter from HITACHI-ALOKA.


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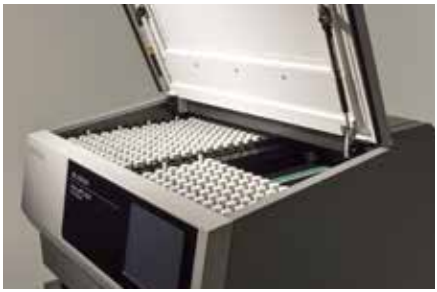
ZINSSER ANALYTIC
36013013

HITACHI-ALOKA LSC-8000

liquid scintillation counter



AccuFLEX LSC-8000 ensures accuracy and flexibility for any basic liquid scintillation measurement in research and environmental laboratories. Quantification of all the beta emitters (with optional alpha/beta separation) is performed using 4000 channels and optimized energy ranges. Pre-set counting windows or Auto Isotope Selection offers any result units in counts, cpm, dpm or Bq.

LSC-8000 can be used with either 20 ml, 8 ml, 6 ml glass or plastic vials or micro tubes, with a 408 sample loading capacity in its racks-based samples changer.

Accurate measurements are provided with External Standard Channel Ratio, Self Constant Channel Ratio methods and other advanced features such as Chemical Luminescence, Color Quenching Corrections and Anti-Static Function.

Data reliability is fully supported by a System Performance Evaluation, including History Review and Security locks, in a GLP mode, with 21 CFR Part 11 included as a standard feature.

Windows based user friendly software and built-in PC with touch panel color LCD and various output interfaces gives all the comfort required on a modern, easy-to-use standard liquid scintillation counter.

Technical Data:

Efficiencies:	^{3}H : > 60%, ^{14}C : > 95% with unquenched sealed standards
Sample Changer:	up to 408 samples, using racks
Analyzer:	4000 channels, up to 3 counting windows, pre-set windows for ^{3}H, ^{14}C, ^{32}P, ^{125}I, ^{32}P Cerenkov, $^{3}H + ^{14}C$, $^{3}H + ^{14}C + ^{32}P$
Background:	< 15cpm depending on vial size and type
Dimensions:	960 x 600 x 850 mm (W x H x D)
Weight:	196 kg

Catalogue No.
30006000

HITACHI-ALOKA LB-7

low level, large volume liquid scintillation counter

LB-7 is a large volume scintillation counter for low level measurement of beta isotopes. It can be used with either 20 ml or 145 ml scintillation vials. The background level is much lower than with any other scintillation counter, due to the large passive lead shielding and active anti-coincidence shielding. The detection threshold for tritium is better than 0.2 Bq/litre in 24 hours counting time.

The LB-7 is easy to use, with the operation and the definition of the measuring window appearing on the VDU. Two multi-channel analysers enable a spectral analysis to be produced on the VDU, which can be plotted out and saved to disk.

The instrument provides automatic quench correction through ESCR and SCCR, an antistatic device, a monitor for chemiluminescence and photoluminescence and isotope half life correction.

Technical Data:

Sensitivity:	for ^{3}H < 0.17 Bq/litre
Sample changer:	cooled, for 20 samples in 145 ml, 100 ml, 20 ml or 8 ml vials with adaptors
Detector:	5 selected photo-multipliers tubes: 3 for the measuring chamber, 2 for the active guard counter
Spectrometer:	variable window selection, 3 independent measuring channels
Background:	< 2.5 cpm
Dimensions:	1230 x 810 x 1600 mm (W x D x H)
Weight:	800 kg

Catalogue No.
30007700

OX-501
The Compact Automatic Oxidizer

The OX-501 is for quench free sample preparation of biological samples which are labelled with ^{3}H or ^{14}C. If the samples are duallabelled, the ^{3}H and ^{14}C are automatically separated.

The OX-501 works on the principle of catalytic combustion. The sample is combusted at 900°C in a flow of oxygen within the horizontal combustion tube. The high combustion temperature guarantees the quick and complete combustion of aqueous solutions, blood, wet filters and damp surface swabs.

OX-501 offers the user the following advantages:

- Quench free samples
- Easy operation
- High reliabil ity
- Compact design
- Economically priced

It is a fully automatic system with electronic controls for gas flow, scintillator volume and combustion time.

OX-501 oxidizers are currently used in:

- The pharmaceutical industry
- Quality control
- Research laboratories
- Environmental research

Technical Data:

Recovery:	for ^{3}H and ^{14}C better than 98%
Reproducibility:	± 1%
Memory effect:	negligible, less than 50 dpm for ^{14}C after repeated combustion of 100,000 dpm samples
Dimensions:	520 x 380 x 560 mm (W x D x H)

Catalogue No.
36013000

OX-701
Proven Oxidizer Techniques with Automated Sample & Vial Handling

- Combusts wet or dry samples and liquids
- Combusts samples up to 300 mg i.e. faeces or tissue homogenates or 0.50 ml whole blood
- Single or duallabelled samples, ^{14}C & ^{3}H
- A sample presentation method that prevents residue build-up common to other systems
- No sample preparation required
- Ideal for soil or high ash content materials and fatty samples
- Combustion temperature of 900°C
- Continuous sample combustion in the 99 MODE and stat determinations in the 00 MODE
- Some existing OX-501 units can be retrofitted
- Recovery 98%
- Reproducibility ± 1%
- Low memory, less than 50dpm above background on samples up to 100,000 dpm
- Rapid start, less than 15 minutes from cold
- Catalytic oxidation ensures removal of quenching agents such as SO_2, NO_2 and others
- Load 12, ^{14}C samples and walk away when working in the 1-12 MODE
- Easily serviced by the user at their facility or the unit can be quickly disassembled for factory service

Technical Data:

Recovery:	for ^{3}H and ^{14}C better than 98%
Reproducibility:	± 1%
Memory effect:	negligible, less than 50 dpm for ^{14}C after repeated combustion of 100,000 dpm samples
Dimensions:	965 x 356 x 534 mm (W x D x H)

Catalogue No.
36014000

Robox
Fully automated sample preparation & oxidation

Robox is our system for fully automatic quench free preparation of samples for liquid scintillation counting.

The sample preparation method is made easier due to the use of an intelligent robot, which enables the system to prepare 120 samples of ^{14}C or dual labelled samples in only 8 hours.

Its multi-user facility allows the addition of extra samples during the work sequence.

Robox consists of a robot with a linear drive and an automatic oxidiser OX-501, which works on the principle of catalytic oxidation. The samples are laid out in a tray and Robox then does the rest.

It transfers the samples to the oxidiser, transports the empty scintillation vials to the oxidiser, collects them after they have been filled with scintillator and combustion product, seals & barcodes them and places them in a transport tray or rack ready for the scintillation counter.

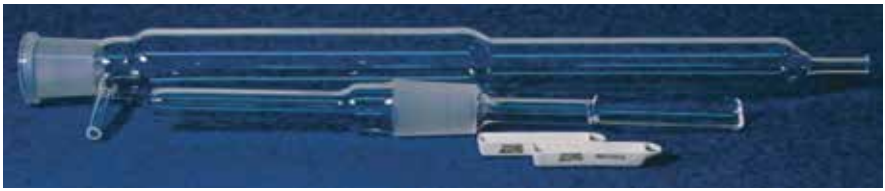
The whole work sequence is monitored by sensors and is computer controlled.

The information supplied by the Robox is:

- Sample number
- Sample ID
- Date and time
- Temperature
- Total combustion list

Robox monitors all process parameters as combustion time, oxigen flow, combustion temperature and sample number.

Robox helps you save on costs:
Costs are in comparison with manual sample preparation reduced by half due to the large number of samples which can be processed automatically in a single run.



Quartz combustion tube for OX 300, 501 & 701

Without catalyst, 1 tube

Catalogue No.
36013010

With catalyst, 1 tube

Catalogue No.
36013011

Tips for OX 300, 400, 501

Tips made from polyethylene for ^{3}H and ^{14}C spouts of Harvey Oxidizer.

Pack Size 1000 tips

Catalogue No.
36013021

O-Rings

Special O-Rings made from solvent resistant plastic for ^{3}H and ^{14}C spouts.

Pack Size 10 O-Rings

Catalogue No.
36013022

Quartz Ladles

Quartz ladles with ground joint for use with Harvey Oxidizers.

Pack Size 1 ladle

Catalogue No.
36013012

Quartz Wool

Pack of 100g

Catalogue No.
36013004

Catalyst 1
Copper Oxide, packed in plastic bottles.

Catalogue No.
36013001

Catalyst 2

Silver Vanadium, packed in plastic bottles.

Catalogue No.
36013002

Catalyst 3
A special, fine mesh net made from platinum gauze.

Catalogue No.
36013003

Sample Boats

Sample boats made from porcelain for storage, weighing out and combustion of samples.

Pack Size 10 boats

Catalogue No.
36013013

Harvester96™

The Harvester96™ is cost effective, simple to use and designed to last for decades. Tomtec Life Science has been servicing the laboratory automation community for over twenty of those years. Based on a highly reliable and eloquent design, the Harvetser96™ is a rugged cost effective bench-top lab instrument, designed to harvest biologics from a 96 well microplate or microtubes onto a glass fiber filter map in a small bench-top footprint.

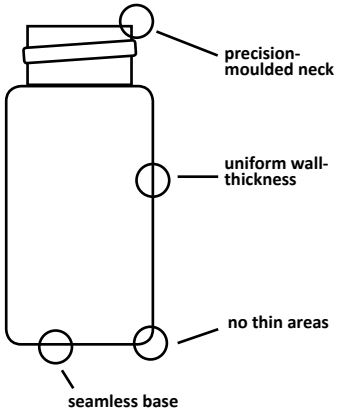
The Harvester96™ is designed to address a wide range of Pharma, BioPharma and laboratory work-flows such as:

- Cell proliferation assays (titrated thymidine uptake)
- Scintillation Counter
- Cytotoxicity assays
- luminescent assay reader
- Receptor binding assay
- luminescent assay reader
- Nucleic acid degradation
- spectrophotometer assay reader
- Trichloroacetic acid preparations
- microscopy
- Cell wash station for adherent cell assays

Harvester96	Manual	Automatic
bench foot-print	12“ wide x 24“ deep	12“ wide x 24“ deep
height	closed 16“ / open 22“	closed 16“ / open 22“
weight	50lb	50lb
power	120w	120w
vacuum connections	1	2
reagent connections	1	2
reagent bottles	one 9 liter bottle with thread on feed cap pressure connection (5 psi)	two 9 litre bottles with thread on feed cap pressure connection (5 psi)
vacuum Autotraps™	one 11.5 litre trap with gage and high level float control	two 11.5 litre traps gage and high level float control

ZINSSER POLYVIALS®

Plastic counting vials have superseded low potassium glass counting vials for several reasons. Their low price makes it possible to use them once and then to dispose of them, taking away the need for cleaning as is required with the more expensive glass vials. Further advantages are the low background rates which are less than 5-7 cpm and the higher UV transmission between 360 and 400 nm.



The dimensions of these counting vials are the same as those for all normal vials for liquid scintillation counting techniques. However, there are marked differences from those offered by other manufacturers. One of the main differences is the type of raw materials used in production. Zinsser Analytic uses only high density rigid polyethylene which has no impurities in it (which may result in quenching). Many cheap plastic vials are made with re-ground materials, which raises the background rate and the risk of quenching. These cheap vials tend to expand when used with solvents such as xylene or toluene and may become stuck in the counting chambers.

Further differences in quality occur through production techniques. Most of the lower quality and cheaper counting vials are produced by extrusion blow moulding. It is easy to identify such vials by noting their uneven wall thickness, the seam on the bottom and the rough edges round the neck of the vial. Micro fine cracks can appear in the bottom seam and ridges can appear at the neck so that the vial can never be sealed properly. This makes the use of such vials in liquid scintillation counters very risky on three counts:

1. a danger of contamination because of the possibility that the bottom seam may not be sealed properly.

2. a risk of mechanical jamming because of ridges in the bottom of the vial.

3. poor cap sealing because of ridges in the neck or an in completely formed neck.

The uneven wall thickness leads to a higher solvent loss by diffusion and greater risk of error, if the sample is not measured straight after its preparation. Other disadvantages of extrusion blow moulded vials are the great deviations in the dimensions of the diameter and height, which can result in mechanical difficulties in liquid scintillation counters.

High quality scintillation counting vials such as Polyvials® are injection blow moulded. This is a two step process. In the first step the neck area is moulded with a preformer. The preformer is held by the neck and in the second step of production, it is blown out to form a counting vial. Counting vials produced using this technique are made from one piece and therefore have no bottom seam, an extremely uniform wall thickness without any weaknesses and a ridge free neck.

Several electronic controls throughout the reduction process guarantee precise dimensions and a high consistency. Hence, although injection blow moulding is a more expensive production technique, it produces vials which are particularly noted for their uniformity and stability.

Polyvials® are supplied with super seal caps with a DIN 22-thread as “Polyvials 20“.

For counting over a long period of time “Polyvials SLD” have been developed. They have an inner coating which helps to slow down the diffusion of solvents.

POLYVIALS® 20

Their uniform wall thickness means accuracy and consistency.

Polyvials® 20 are manufactured from one piece by injection blow moulding which guarantees the highest integrity.

They give especially low diffusion for toluene and other solvents and because of their precision production they do not get stuck in counters.

They are available with coloured caps to make identification easier.

Because of their size they can be used with all liquid scintillation counters.

Technical Data:

Volume	20 ml
Background	5-7 cpm
Wall thickness	1.0 mm
Height with cap	60 mm
Diameter	27 mm
Thread	DIN 22
Material	Ultra high density polyethylene (Hostalen®) 100% pure, no reground material.

Catalogue No.	Description
3071401	with white caps
3071402	with red caps
3071403	with blue caps
3071404	with green caps

Properties of Polyvials® 20

Solvent loss at 20°C in 24 hours:
Toluene <0.8%

Material expansion in 200 hours:
Toluene <0.8%

Temperature stability:
without mechanical strain up to 120°C
with mechanical strain up to 80°C

Polyvials® are packed 1,000 per carton.
The vials and caps are packed separately in dust free plastic bags within the carton.

POLYVIALS®145

Special counting vials for Aloka Low Level Scintillation counters LB I, II, III, IV & 5.

Volume	145 ml
Dimensions	33 mm diameter 84 mm high
Thread	DIN 22 with special self-sealing caps (As Polyvial 20)

Pack 250 per carton

Catalogue No.
3040002

POLYVIALS® SLD

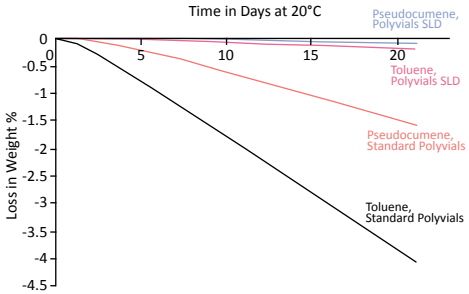
SLD stands for “super low diffusion”.

Polyvials® SLD have been specially developed for use in low level counting, eg. for samples which will be observed over a long time or which must be repeatedly measured.

They are in fact Polyvials® which have been specially treated by a patented process which produces a thin layer of PTFE within the vial and cap.

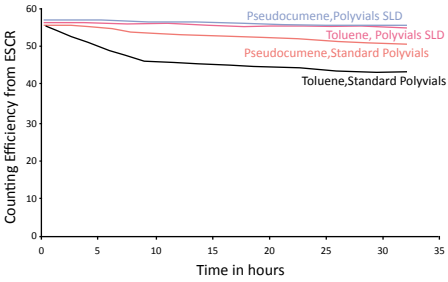
Diffusion of Solvent

The solvent diffusion for a highly volatile solvent such as toluene is practically eliminated.



Behaviour of ESCR Values

Because less solvent penetrates the walls of the vial, Polyvials® SLD produce less “plastic wall effect”, which means that there is little change in ESCR values.



POLYVIALS® 20 SLD

100 vials and caps per carton

Catalogue No.
3071490

POLYVIALS® 145 SLD

Special vials for Aloka LB I, II, III, IV & 5 counters

100 vials with screw caps per pack

Catalogue No.
3040090

ZINSSER MINIS® 2000

MINIS® 2000 are miniature counting vials made from polyethylene with a special sealing system, for liquid scintillation counting.

They offer:

- greater safety through precision moulding
- outstanding uniformity of thickness
- easier to open and close caps
- better seals leading to less leakage

Caps for MINIS® have inner and outer seals. They are easy to fit, push on and turn slightly, to give an excellent seal. Just a small turn and pull will open the cap.

MINIS® 2000 minimise the volume of sample used.

Flush cap

Flanged cap

1. MINIS® 2001 for Minivial Counters

These vials meet the IEC-Standard for miniature vial counters. The cap is flush sided and ribbed for easy handling.

Volume:	5.5 ml
Dimension:	16 mm x 57 mm (Ø x H)
Pack size:	2500 pcs per carton

Catalogue No.
3020001

2. MINIS® 2002 for Normal LSC Counters

MINIS® 2002 with flanged cap designed to hang in a 20 ml vial which can be used with all commercial scintillation counters. When using an adaptor, the best results are obtained using Polyvials® (Cat. no. 3071401) or glass adaptors (Cat. no. 986745).

Volume:	5.5 ml
Dimensions:	16 mm x 57 mm (Ø x H)
Pack Size:	2500 pcs per carton

Catalogue No.
3020002

MINIS® 1000

These are 4 ml counting vials made from transparent polypropylene. They have specially designed flush sided caps which ensure optimum sealing. They are designed especially for BECKMAN-Gamma Counters and liquid scintillation counting, but are also ideal for many sample collection applications.

Volume:	4 ml
Dimensions:	13 x 57 mm (Ø x H)
Pack size:	3000 per carton including caps

Catalogue No.
3010000

MINIS® M

Special “Push-On” Minivial, exclusively designed in cooperation with WALLAC for their new MICROBETA Scintillation counter.

Volume:	3 ml
Dimensions:	15 x 40 mm (Ø x H)
Pack size:	3000 per carton

Catalogue No.
3011000

WHEATON Counting Vials

20 ml glass counting vials

Background less than 20 cpm

Wheaton scintillation vials are the original standard by which counting vials are judged. Wheaton “180“ brand low potassium glass and critical manufacturing tolerances assure reliable, consistent results in scintillation counting. Vials load properly into counting machines without jamming or breaking. Background counts are consistent and low; ultraviolet transmission is high. White caps fittightly to avoid fumes in the laboratory and have tops suitable for writing. They are packed in trays of 100 with 5 trays per carton.

Dimensions 28 x 61 mm (dia x high)
(with cap fit ted)

1. with screw caps packed separately

Catalogue No.	Cap size	Cap Material, Liner
986541	22 mm	PP, Metal Foil
986542	22 mm	Urea, Metal Foil
	22 mm	Urea, Polyethylene Disc
986562	24 mm	Urea, Metal Foil

2. with screw caps at tached

Catalogue No.	Cap size	Cap Material, Liner
986581	22 mm	PP, Metal Foil
986582	22 mm	Urea, Metal Foil
986588	22 mm	PP, Self Sealing

Also available without caps - **986532**

Wheaton Minis

6ml Minis made from borosilicate glass
Miniature counting vials made from borosilicate glass, Wheaton “180“ have a very high UV transmission and exceptionally low background count. Packed in trays of 200, 5 trays (1000 vials) per carton, including white, metal foil lined, screw caps.

Dimensions 17 x 58 mm (dia x high)
Cap size 15 mm

Catalogue No.	Cap size	Cap Material, Liner
986492	15 mm	Metal Foil

Caps for Scintillation Vials

Zinsser Screw caps can be used on all currently available glass counting vials. They are made from plastic resins with pigments especially selected for low phosphorescence. They are available in white, red, blue and green and have tops suitable for writing, with finger-friendly grips for easy handling. ZINSSER Screw Caps are supplied with either a metal foil liner with polypropylene foam backing or a self sealing ring.

1. for glass vials with 22 mm screw thread

Caps made from rigid urea (30153..), are mechanically very strong and give a safe seal. Caps made from polypropylene (30154..) are economical and can be disposed of by incineration.

Pack size 1000 per bag

Colour	**Rigid urea** metal foil liner
White	**3015311**
Red	**3015312**
Blue	**3015313**
Green	**3015314**

Colour	**Rigid urea** PE cone liner
White	**3015301**
Red	**3015302**
Blue	**3015303**
Green	**3015304**

2. for glass vials with 24 mm screw thread

These are suitable for Wheaton Vials, catalogue no. 986562, and are made from white rigid urea with a metal foil liner.

Colour	**Catalogue No.**
White	**3041101**

3. for glass vials with 15 mm screw thread

These are suitable for Wheaton-Minis, catalogue no. 986492, and are made from rigid urea.

With metal foil liner

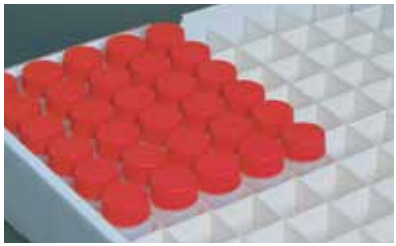
Colour	**Catalogue No.**
White	**3016511**
red	**3016512**
blue	**3016513**
green	**3016514**

With polyethylene foam liner

Colour	**Catalogue No.**
White	**3016501**
Red	**3016502**
Blue	**3016503**
Green	**3016504**

Cardboard Trays

for 20 ml vials



Heavy duty card trays with divisions for 100, 20 ml scintillation vials arranged 10 x 10.

Packed flat with pre-assembled divisions for easy self-assembly, in cartons of 15 trays and divisions.

Catalogue No.
3007800

Wheaton Rack

for 20 ml and 6 ml vials

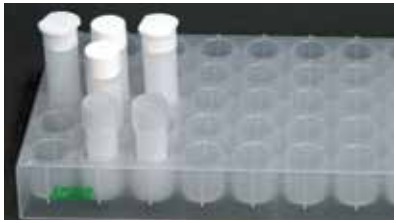
Sturdy plastic trays made from durable, autoclavable polypropylene, for 50 (5 x 10), 20 ml scintillation vials or 90 (6 x 15), miniature counting vials with a diameter up to 17 mm.

Dimensions	170 x 320 x 32 mm
Pack size	5 trays

Catalogue No.

868806	Rack for 50 x 20 ml scintillation vials
868810	Rack for 90 miniature counting vials

Zinsser Rack for Minis



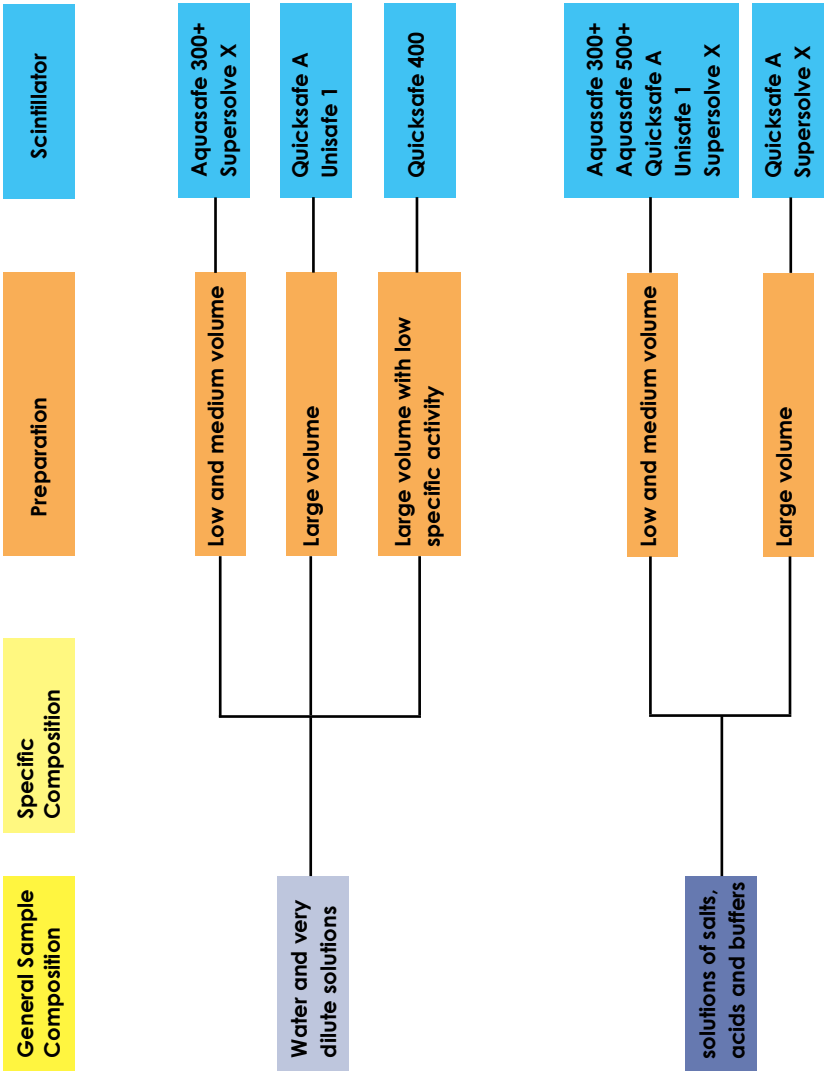
A special rack made from polypropylene for 5 x 10 Zinsser Minis. It can resist most organic reagents.

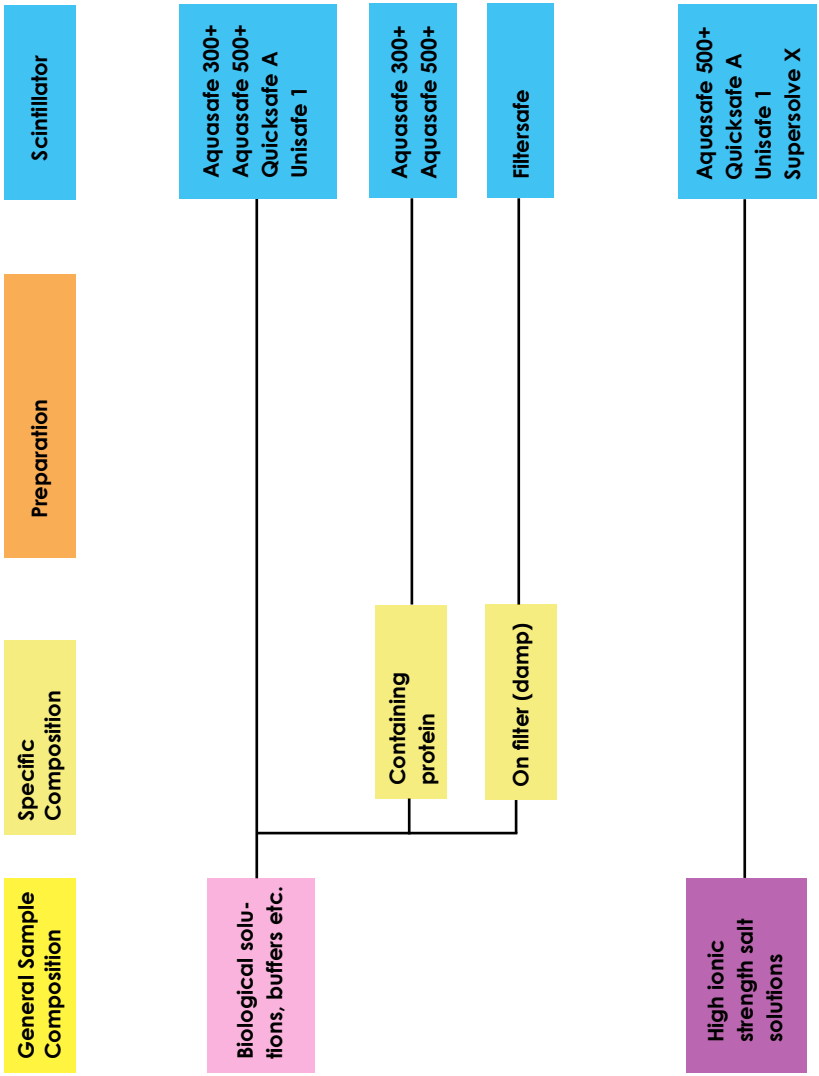
Dimensions	117 x 230 x 28 mm
Pack size	10 trays

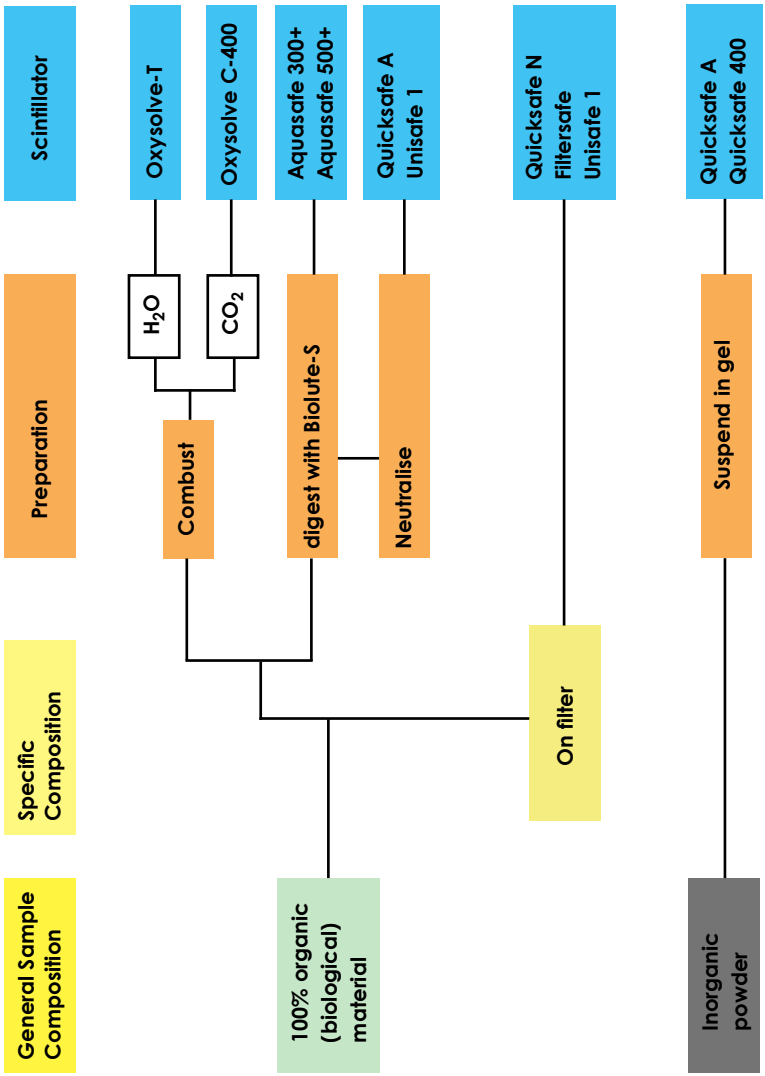
Catalogue No.
3088300

Scintillator	Characteristics	Flash Pt	Solvent
Safe Scintillators			
Aquasafe 300 PLUS	high efficiency, for aqueous samples	>120°C	Diisopropylnaphthalene
Aquasafe 500 PLUS	high capacity for aqueous samples	>120°C	Diisopropylnaphthalene
Quicksafe A	general purpose, for aqueous samples	>130°C	Diisopropylnaphthalene
Supersolve X	general purpose, for aqueous samples	148°C	Diisopropylnaphthalene
Unisafe 1	general purpose, for aqueous samples	>110°C	Diisopropylnaphthalene
Quicksafe N	for non-aqueous samples	>140°C	Diisopropylnaphthalene
Flow Cell Scintillators			
Quicksafe Flow 2	for polar solvents and their aqueous gradients	>110°C	Diisopropylnaphthalene
Quickszint Flow 302	solvent/water-gradients	35°C	Pseudocumene
Special Scintillators			
Oxysolve C-400	a complete scintillator for CO_2	30°C	Pseudocumene
Oxysolve T	a complete scintillator for H_2O	37°C	Pseudocumene
Quicksafe 400	high efficiency for low-level-counting	>130°C	Diisopropylnaphthalene
Filtersafe	high efficiency for filters	>120°C	Diisopropylnaphthalene

The above are our most commonly used cocktails, please ask for further details of our other specialist and flammable cocktails.


General Sample Composition
Specific Composition
Preparation
Scintillator
Water and very dilute solutions
Low and medium volume
Large volume
Large volume with low specific activity
Aquasafe 300+
Supersolve X
Quicksafe A
Unisafe 1
Quicksafe 400
solutions of salts, acids and buffers
Low and medium volume
Large volume
Aquasafe 300+
Aquasafe 500+
Quicksafe A
Unisafe 1
Supersolve X
Quicksafe A
Supersolve X


Scintillator
Preparation
Specific Composition
General Sample Composition
Aquasafe 300+
Aquasafe 500+
Quicksafe A
Unisafe 1
Aquasafe 300+
Aquasafe 500+
Filtersafe
Aquasafe 500+
Quicksafe A
Unisafe 1
Supersolve X
Containing protein
On filter (damp)
Biological solu-tions, buffers etc.
High ionic strength salt solutions


General Sample Composition
Specific Composition
Preparation
Scintillator
100% organic (biological) material
On filter
Inorganic powder
Combust
digest with Biolute-S
Neutralise
Suspend in gel
H_2O
CO_2
Oxysolve-T
Oxysolve C-400
Aquasafe 300+
Aquasafe 500+
Quicksafe A
Unisafe 1
Quicksafe N
Filtersafe
Unisafe 1
Quicksafe A
Quicksafe 400

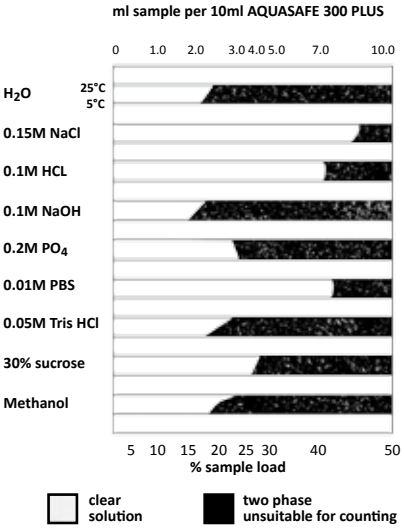
Aquasafe 300 Plus

A safe scintillation cocktail for aqueous samples with a high efficiency.

A scintillator with a high counting efficiency for low to medium ionic strength aqueous solutions, including saline. Sample uptake is up to 3 ml per 10 ml AQUASAFE 300 Plus. Many biological solutions can be counted without pretreatment, including albumin and serum.

Tissue solubilisers and other alkaline solutions do not cause chemiluminescence.

Sample Acceptance Data



Order and Transport Information:
harmful, dangerous for the environment

UN number	3082
UN Hazard Class	9
Pack Size	2 x 5 litres
Flashpoint (PMCC)	>120°C

Catalogue No.
1008300

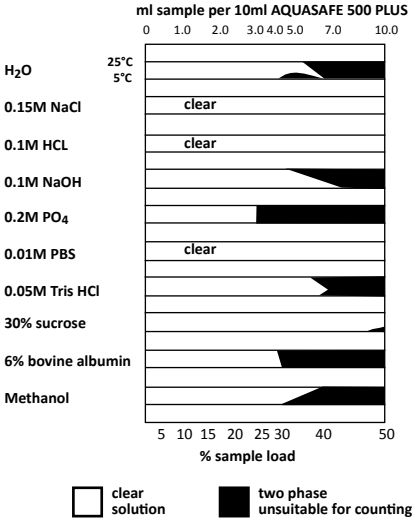
Aquasafe 500 Plus

High counting efficiency and high sample capacity.

The high sample uptake, 5 ml sample per 10 ml of cocktail, makes AQUASAFE 500 Plus the ideal choice for economical counting using Zinsser Mini vials.

AQUASAFE 500 Plus is stable over a wide temperature range, thus avoiding false results due to sample separation in cooled counters.

Sample Acceptance Data



Order and Transport Information:
harmful, dangerous for the environment

UN number	3082
UN Hazard Class	9
Pack Size	2 x 5 litres
Flashpoint (PMCC)	>120°C

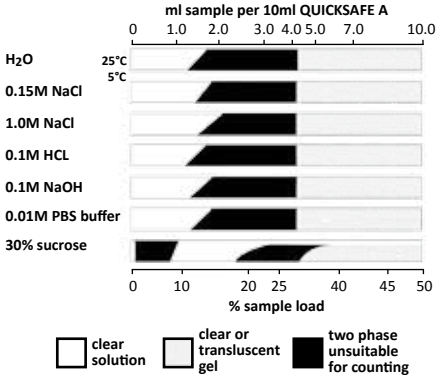
Catalogue No.
1008500

Quicksafe A

Quicksafe A is an economical universal scintillator which can be used as a direct replacement for any flammable gel forming scintillator without loss of counting efficiency. These solutions and gels are stable and can be used for counting large sample volumes.

Quicksafe A has a large sample uptake capacity and a high efficiency for ^{3}H and ^{14}C. Practically all biological sample materials, including serum and plasma can be measured using Quicksafe A, without any need for prior preparation. Sample volumes of over 4.5 ml per 10 ml Quicksafe A form viscous solutions or gels.

When Quicksafe A is mixed with water in the ratio 1:1 a stable gel is formed in which even powdered samples can be suspended for counting and Quicksafe A does not diffuse through the walls of plastic counting vials.



Order and Transport Information:
harmful, dangerous for the environment

UN number	3082
UN Hazard Class	9
Pack Size	2 x 5 litres
Flashpoint (PMCC)	>130°C

Catalogue No.
1008000

Supersolve X

A New Scintillation Cocktail for Aqueous Sample.

Supersolve®-X is a multipurpose LSC cocktail producing approximately 55% Tritium efficiency unquenched. Supersolve-X works with most dilute aqueous samples and can accept up to 5.0 ml sample in 10.0 ml cocktail at 20°C. Supersolve-X produces higher sample capacities increased at lower temperatures making it ideal for use with chilled LSC Counters. Supersolve-X shows a low background count rate of < 20 cpm in a 0 – 18.6keV window. Supersolve-X is suitable for use with all commonly used alkaline solubilisers.

Sample Acceptance Data Between 14° and 20°C

Sample type	20°C	14°C
Deionised water	3.00 ml	3.00 ml
0.01M PBS (pH 7.2)	8.25 ml	10.00 ml
0.1M PBS (pH 7.2)	6.90 ml	10.00 ml
0.2M NaH2PO4 (pH 4.9)	6.00 ml	8.00 ml
0.1M HCl	8.20 ml	10.00 ml
0.1M NaOH	9.00 ml	10.00 ml
1.0M NaOH	1.10 ml	1.20 ml
0.5M NaCl	6.90 ml	10.00 ml
1.0M HCl	3.10 ml	2.70 ml
1.0M HNO3	2.10 ml	2.00 ml
1.0M H3PO4	9.50 ml	9.50 ml

Order and Transport Information:
harmful, dangerous for the environment

UN number	3082
UN Hazard Class	9
Pack Size	2 x 5 litres
Flashpoint (PMCC)	148°

Catalogue No.
1001100

Unisafe 1

An economical non-gelling safe scintillation cocktail for aqueous samples

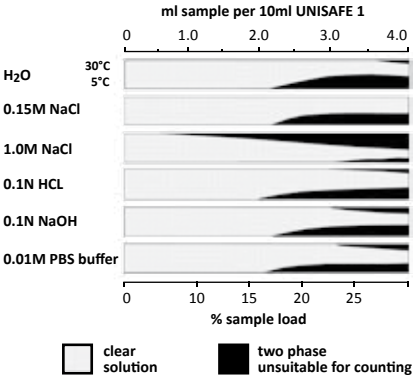
Non-hazardous - flashpoint over 100°C
Environmentally friendly - biodegradable
Safe - no hazardous components
Odourless - no dangerous fumes

Unisafe 1 is a recent addition to the Zinsser Analytic range and is a non-gelling replacement for gel forming cocktails, both safe and non-flammable.

This allows the dissolution of aqueous solutions to at least 2.5 ml per 10 ml without gels or thick liquids.

It accepts a wide range of concentrations and ionic strengths. Providing the solution is clear it will be stable.

Mixing is rapid and Unisafe 1 has found applications in flow cell counting.



Order and Transport Information:
harmful, dangerous for the environment

UN number	3082
UN Hazard Class	9
Pack Size	2 x 5 litres
Flashpoint	>110°C

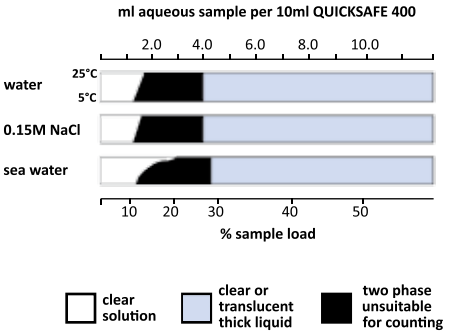
Catalogue No.
1001000

Quicksafe 400

Quicksafe 400 is especially in tended for low level counting where a high sample acceptance and high counting efficiency are important.

Quicksafe 400 is manufactured from specially selected components to ensure high counting efficiency, low background and batch to batch consistency. The scintillator can take water volumes up to 1.4 times the scintillator volume. The optimum figure of merit is achieved with equal volumes of sample and scintillator.

There is no loss of solvent by diffusion through the walls of polyethylene vials, and counting for long periods is therefore possible.



Order and Transport Information:
harmful, dangerous for the environment

UN number	3082
UN Hazard Class	9
Pack Size	2 x 5 litres
Flashpoint (PMCC)	>130°C

Catalogue No.
1008200

Filtersafe

- for counting filter discs
- non toxic solvent
- high counting efficiency
- low odour
- non-flammable

Filtersafe is suitable for counting precipitates and other materials on both dry and damp filter discs. It penetrates the filter rapidly to give high and consistent counting efficiencies with cellulose acetate, cellulose nitrate, mixed ester and glass fibre filters. As with all scintillators, lower efficiencies are obtained with paper filters.

Counting efficiencies with Filtersafe are higher than those obtained by immersing the filter in toluene based lipophilic scintillators. There are also advantages when compared with mixed solvent based scintillators which are used to dissolve, for example, cellulose nitrate filters. Using Filtersafe sample preparation time is reduced significantly, since the filter does not have to be dissolved, handling is not subject to restrictions caused by flammable solvents and high counting efficiencies are obtained.

Filtersafe does not diffuse through the walls of polyethylene scintillation vials. The use of expensive glass vials is therefore eliminated when samples need to be retained. The use of Filtersafe is simple. Drop the filter into the counting vial and fill with the appropriate amount of Filtersafe, allow the scintillator to penetrate the filter and count. The exact volume of Filtersafe needed will depend upon the size of the filter and the sensitivity of the scintillation counter to variations in the ievel of the liquid scintillator in the vial, all the filter should be immersed in the cocktail.

Order and Transport Information:

harmful

UN number	3082
UN Hazard Class	9
Pack Size	2 x 5 litres
Flashpoint (PMCC)	>130°C

Catalogue No.
1008110

Quicksafe N

- Non-toxic solvent
- Non-flammable
- Low odour
- Biodegradable
- For non-aqueous samples

Quicksafe N is one member or new range of scintillation cocktails, which have been developed by Zinsser Analytic to meet the requirements of the modern counting laboratory. The solvent, di-isopropyl-naphthalene, is acknowledged to be the safest available for use in scintillation work. It is non-toxic, has a high flash point and is odourless. Consequently Quicksafe N is pleasant to handle and easy to store.

Quicksafe N no longer disperses in water, this makes it possible for it to be used for Radon extraction and counting.

Sample Acceptance

The miscibility of commonly used organic solvents with Quicksafe N is given in the table below.

S - soluble in all proportions
L - limited solubility
N - insoluble

Acetic Acid	S
Acetone	S
Dimethylformamide	S
Ethyl acetate	S
Ethylene glycol	N
Hexane	S
Methanol	L
iso-propanol	N
Pseudocumene	S
Tetrahydrofuran	S
Toluene	S
Xylene	S

Order and Transport Information:

UN number	1993
UN Hazard Class	3
Pack Size	2 x 5 litres
Flashpoint (PMCC)	>140°C

Catalogue No.
1008100

Quickszint Flow 302

Flow cell scintillator
Low viscosity, non-gelling
Suitable for solvent/water gradients
Buffer gradient capability for HPLC

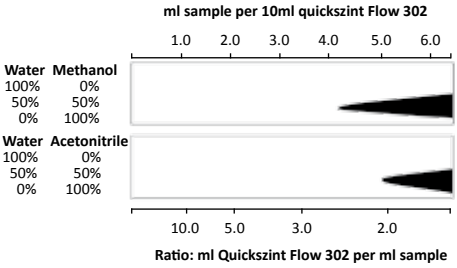
Quickszint Flow 302 is recommended for the flow cell counting of solutions of hydrophilic solvents (eg. acetonitrile, methanol) in water.

It is also suitable for use with water and low ionic strength aqueous solutions.

Gradients

Quickszint Flow 302 is completely miscible with water/methanol and water/acetonitrile gradients ranging from 100% water to 100% solvent in the gradient/scintillator ratios shown in the diagram below.

Gradient samples at 18°C - 25°C



For higher ionic strength aqueous solutions Quickszint Flow 303 is more suitable and for non-aqueous solvents Quickszint Flow 301 is recommended.

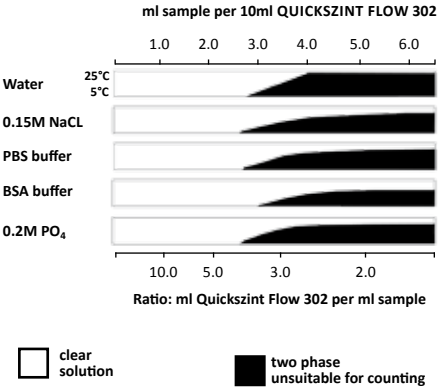
Quench Resistance

Quickszint Flow 302 is out standingly quench resistant and maintains a constant counting efficiency as the gradient changes.

Sample uptake

with a constant sample concentration

The following diagram shows the capacity for aqueous samples at temperatures ranging from 5°C to 25°C:



Order and Transport Information:
flammable, dangerous for the environment

UN number	1993
UN Hazard Class	3
Pack Size	2 x 5 litres
Flashpoint (PMCC)	35°C

Catalogue No.
1006000

Quicksafe Flow 2

A safe scintillation cocktail for flow cell applications

Quicksafe Flow 2 has an exceptionally low viscosity which is maintained when mixed with sample. This is essential for consistent results in flow cell counting.

Quicksafe Flow 2 is ideal for the flow cell measurement of water, acetonitrile, methanol or other polar solvents and their aqueous gradients.

Sample Capacity
The following table lists the recommended ratio (Rec) of **Quicksafe Flow 2 : sample at 20°C** and the maximum sample capacity (Max).

Sample	Rec	Max
Water	2:1	33%
50% Acetonitrile, 50% 0.05M K2HPO4	2:1	40%
50% Acetonitrile, 50% Water	2:1	33%
Acetonitrile	1:1	100%
50% Methanol, 50% Water	3:1	33%
Methanol	1:1	100%
0.15M Sodium Chloride	2:1	40%
0.2M Potassium Phosphate	3:1	33%

Counting Efficiency
The counting efficiency of Quicksafe Flow 2 is comparable with that of flammable flow scintillators. Typical tritium counting efficiencies are given below, again the ratio is **Quicksafe Flow 2: sample**.

Sample	5:1	3:1	2:1
Water	23%	21%	19%
50% Acetonitrile, 50% 0.05M K2HPO4	20%	18%	16%
50% Methanol, 50% Water	20%	19%	11%
0.15M Sodium Chloride	21%	20%	-
2M Ammonium Formate	-	21%	-

Order and Transport Information:

harmful	
UN number	3082
UN Hazard Class	9
Pack Size	2 x 5 litres
Flashpoint (PMCC)	>110°C

Catalogue No.
1004000

Oxysolve C-400

A complete scintillator for counting ^{14}C. It contains a specially sourced CO_2 absorber for quick uptake of CO_2. The high CO_2 capacity ensures complete absorption of up to 1.8g CO_2 per 15ml Oxysolve C-400.

It is recommended for use with the Harvey Oxidisers (OX-300, OX-400, OX-501) and can also be used for any type of $^{14}CO_2$ measurement.

It is packaged under nitrogen in 2.5 litre amber glass bottles.

Order and Transport Information:

corrosive, flammable	
UN number	1993
UN Hazard Class	3
Pack Size	4 x 2.5 litres
Flashpoint (PMCC)	30°C

Catalogue No.
1691400

Oxysolve T

Specially for mulated to completely to dissolve water from sample oxidisers without foaming or carry over and without gels to block the pipe work or cause carry over between samples.

The maximum amount of water is 3 ml per 15 ml.

Order and Transport Information:

flammable	
UN number	1993
UN Hazard Class	3
Pack size	2 x 5 litre
Flashpoint (PMCC)	37°C

Catalogue No.
1692600

ZINSSER-Dispensette®

A simple manually operated bottle-top dispenser suitable for a wide variety of liquids.

Fits 32mm bottle necks.

Additional adapters to fit 38 mm, 40 mm & 45 mm bottle necks included.

- Reagents only come into contact with chemically inert materials
- Accuracies of ± 0.6% of set volume
- Safety discharge valve prevents liquid from spurting out of valve opening
- Multi-layered PTFE piston ensures smooth operation in the glass barrel
- Quick release connector allows quick mounting and removal of the Dispensette
- The protective sleeve around the glass cylinder reduces the risk of breakage

Standard Dispensette 2-10 ml

Volume range 2 ml to 10 ml with 0.2 ml subdivisions.

The Dispensette is supplied with a long PTFE suction tube.

Catalogue No.
704609

Micro Dispensette 0.4-2 ml
Volume range 0.4 ml to 2 ml with 0.05 ml subdivisions.

Catalogue No.
704607

Mini Dispensette 1-5 ml
Volume range 1 ml to 5 ml with 0.1 ml subdivisions.

Catalogue No.
704608

Adapters & Tubing

Catalogue No.	Description
704612	Adapter for 63 mm screw thread (fits 5L black cocktail bottles)
704613	Adapter for 38 mm screw thread (fits 5L green cocktail bottles)
704330	Adapter for 31 mm screw thread (fits 2.5L cocktail bottle)
704212	PTFE suction tubing
704230	Dispenser Tubing*

* An 800 mm long PTFE tube, which fits onto the outlet nozzle of a Dispensette so that vials in a tray can be filled without having to lift them in dividually from the tray.


MHF2-16DR
SMC
MADE IN JAPAN

General Terms of Sale, Delivery and Payment

General information

The terms of sale, delivery and payment listed below shall apply to all contractual conclusions with our customers also if with future business the terms and conditions are not even sent to the orderer. Terms of purchase of the orderer which deviate from our terms and conditions shall not become contents of the contract, not even if these are not explicitly objected to on our part.

The legal invalidity of one or several terms and conditions of these general terms of sale, delivery and payment shall have no effect on the legal validity of the other terms and conditions.

Offers and orders

Offers shall always be carried out non-binding, oral agreements are only binding for us if we confirmed these in writing. Our terms of sale shall apply in any case unless we explicitly confirm deviations thereof in writing. Orders shall as a rule be accepted by delivery. Confirmations of orders shall only be carried out at special request.

If a written order follows in order to confirm an orders which has already been placed by telephone then this is to be marked by the orderer without any misunderstandings, otherwise the order by telephone shall apply.

Prices

Our prices apply in EUR ex warehouse Frankfurt, excluding packaging, plus the applicable rate of value added tax. We reserve the right to make changes to the prices. Decisive for the invoicing are the prices which are valid on the day of delivery. With orders of less than EUR 50.- goods value we shall charge a processing flat rate in the amount of EUR 10.- per order.*

Passing of risk

The sending and possible return shipment shall be carried out at the risk and the costs of the orderer.

Insofar as the orderer does not issue any special instructions for the shipment (express service, express package, shipment by air etc.) this shall be carried out by us to the best of our discretion subject to the most reasonable type of shipment.

As with damages in transit, irrespective of our liability exclusion, a liability of the railway, post or freight forwarder can occur, the recipient has to inspect the respective shipment immediately after delivery and to have possible damages or losses confirmed by the deliverer immediately in writing so that the possibility is retained to report claims for recourse to the post, railway or freight forwarder.

In the event of self-collection damages in transport shall be solely for the expense of the orderer.

Delivery

The ordered goods shall be delivered as soon as possible after receipt of the written or oral order.

With the order of several articles the delivery time can vary. In this case partial deliveries will be carried out in order to delivery the respective available products as soon as possible. Transport and shipment costs shall be charged in full for each partial delivery. If partial deliveries are not requested then this is explicitly to be noted on the order.

In case of delay in delivery the orderer is not entitled to cancel the contract in full or in part or to request damages owing to non-fulfilment if it has not set a final deadline of four weeks after occurrence of the delay in delivery.

In the event of force majeure (strike, lock-out, interferences to transport for which there is no fault) we are entitled by notifying the orderer without obligation for damages to cancel the contract or we can refuse to fulfil the contract until the remedy of the impediment without being deemed in default.

Return shipments

Return shipments shall only be accepted by us after prior agreement. In any case the return shipment shall be carried out at the risk and burden of the sender. In certain cases a processing fee can be charged for return shipments.

Packaging and shipment

All products are sent by us at the risk of the buyer, if possible in disposable packaging, which cannot be taken back. If the products require a special packaging owing to their condition such as dry ice, these packaging costs shall be invoiced as cost price.

If not otherwise agreed the choice of the transport route shall be made by us. Costs for the shipment and the transport insurance shall be for the expenses of the orderer.

Liability for defects

Reports of defects shall only be taken into consideration if they have been reported in writing within 10 days after receipt of the goods at the place of destination. The deadline is only granted if the report of defects is received by us within the stated 10-day deadline.

With the timely and substantiated reports of defects we are entitled at our discretion, to either remedy the defects, deliver free substitute or to take the goods back at the charged price if payment had already been made.
The orderer shall not be entitled to further claims. It is in particular not entitled in case of reports of defects to refuse the payment of the owed purchase price in full or in part. In case of non-payment the orderer shall lose all claims from existing defects.
Insofar as merely a part of the delivery features defects the orderer is not entitled to complain about the whole delivery.
A claim for damages owing to breach of the obligation for subsequent improvement or substitute delivery is excluded; the recipient has insofar only the right to cancellation.
Insofar as permitted the product liability with imported goods including the liability for indirect damages is excluded. The liability for all other damages, in particular follow-up damages, is – insofar as permitted by law – is excluded.
The same shall apply insofar as warranted properties are missing; the claims for reimbursement of follow-up damages of damages is excluded. If used objects were to be delivered then all warranty and – insofar as permitted by law – the liability for all damages is excluded.
We shall not be liable in any way for complaints, which arise from the fact that the orderer has based its order upon false information and documents. There is in particular no right for the orderer to exchange. Our liability is principally limited to damages which are typically to be expected.
In the event of the delivery of special productions we are merely obliged in case of timely and substantiated report of defects to confirm the defect. A substitute delivery or the taking back is excluded. We reserve the right to technical and optical changes as well as improvements.

Reservation of title

The delivered goods shall remain our property until the full payment of all claims against the orderer – no matter for what legal grounds and also for passed or future deliveries. The orderer possesses the delivered goods in the ratio to us as safekeeper. With the acceptance of bills of exchange and cheques the reservation of title shall remain until they are encashed or credit without reservation.
In case of attachment of the delivered goods, to which our reservation of title exists, the orderer has the obligation to immediately report to us so that we can assert our reservation of title. The orderer is not entitled to pledge goods delivered by us as long as the reservation of title exists, to carry out assignments of collateral or to conclude exchange contracts. If the orderer sells goods delivered by us before the purchase price has been paid then it hereby now already assigns the claims to which it is entitled from the sale against its buyers up to the full redemption of all claims against it with all secondary rights to us. We accept the assignment. The orderer undertakes to send us after request a list of these claims and to inform its buyers. We are then entitled to collect these claims in our own name.
If the buyer maintains a current account relationship with its buyer then the current account claim of the buyer against its buyers is to be hereby now already assigned to us up to the amount of all of our claims from the regular business relationship against the buyer. We accept the assignment.

Payment

Our prices and other conditions are based upon a punctual settlement. If the term of payment is exceeded we shall charge the respective customary bank interest.

General liability exclusion

Insofar as we provide information, instructions and recommendations in technical questions within the framework of our delivery programme these are non-binding and are carried out without warranty obligation. Neither shall we liable for printing errors or information by mistake in catalogues, brochures and other documents. Neither shall we be liable for damages, which are caused directly or indirectly by our goods.

Place of performance and place of jurisdiction

The place of performance for our deliveries and the payment of the price as well as other services is Frankfurt am Main.
The place of jurisdiction for all disputes from this contract, except bill of exchange and cheque matters, is Frankfurt am Main.
German law is always to be applied – also to the relationships to overseas contractual partners.

Frankfurt, January 2015

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