



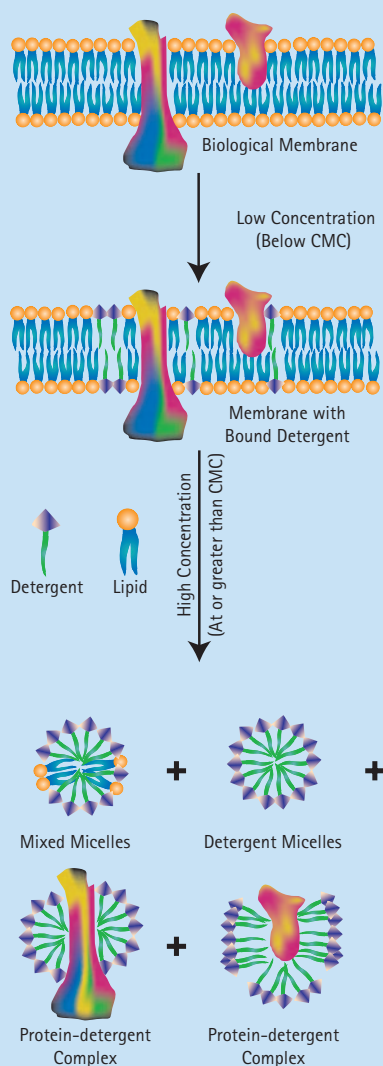
Detergents

Solubilize Your Membrane Proteins
with Top Quality Detergents and
Solubilizing Agents From CALBIOCHEM®

Advancing your life science discoveries™



Solubilization of Cell Membranes with Detergents



Product	Type	Cat. No.	Size
APO-10	Non-Ionic	178375	1 g
APO-12	Non-Ionic	178377	1 g
ASB-14	Zwitterionic	182750	5 g 25 g
ASB-14-4	Zwitterionic	182751	1 g 5 g
ASB-16	Zwitterionic	182755	5 g 25 g
ASB-C6Ø	Zwitterionic	182728	1 g 5 g
ASB-C8Ø	Zwitterionic	182730	1 g 5 g
Big CHAP	Non-Ionic	200965	1 g
Big CHAP, Deoxy	Non-Ionic	256455	250 mg 1 g
BRIJ® 35, 30% Solution	Non-Ionic	203724	100 ml 1 L
BRIJ® 35, PROTEIN GRADE® Detergent, 10% Solution, Sterile-Filtered	Non-Ionic	203728	50 ml
C ₁₂ E ₅	Non-Ionic	205524	1 g
C ₁₂ E ₈	Non-Ionic	205528	1 g
C ₁₂ E ₈ , Protein Grade, 10% Solution	Non-Ionic	205532	1 set*
C ₁₂ E ₉ , Protein Grade, 10% Solution	Non-Ionic	205534	1 set*
Cetyltrimethylammonium Bromide (CTAB) Molecular Biology Grade	Ionic	219374	100 g
CHAPS	Zwitterionic	220201	1 g 5 g 10 g 25 g
CHAPSO	Zwitterionic	220202	1 g 5 g
Chenodeoxycholic Acid, Free Acid	Ionic	2204	5 g
Chenodeoxycholic Acid, Sodium Salt	Ionic	220411	5 g
Cholic Acid, Sodium Salt	Ionic	229101	50 g 250 g
Cholic Acid, Sodium Salt, ULTROL® Grade	Ionic	229102	1 g 5 g
Cyclohexyl- <i>n</i> -ethyl-β-D-maltoside, ULTROL® Grade	Non-Ionic	239774	1 g
Cyclohexyl- <i>n</i> -hexyl-β-D-maltoside, ULTROL® Grade	Non-Ionic	239775	1 g
Cyclohexyl- <i>n</i> -methyl-β-D-maltoside, ULTROL® Grade	Non-Ionic	239776	1 g
DDMAB	Zwitterionic	252000	5 g
DDMAU	Zwitterionic	252005	5 g
<i>n</i> -Decanoylsucrose	Non-Ionic	252721	1 g 5 g
<i>n</i> -Decyl-β-D-maltopyranoside, ULTROL® Grade	Non-Ionic	252718	1 g 5 g
<i>n</i> -Decyl-β-thiomaltoside, ULTROL® Grade	Non-Ionic	252725	500 mg
Deoxycholic Acid, Sodium Salt	Ionic	264101	25 g 100 g 1 kg
Deoxycholic Acid, Sodium Salt, ULTROL® Grade	Ionic	264103	5 g 25 g 100 g

* 1 set = 5 x 10 ml

Product	Type	Cat. No.	Size
Digitonin, Alcohol-Soluble, High Purity	Non-Ionic	300411	250 mg 1 g
Digitonin, High Purity	Non-Ionic	300410	250 mg 1 g 5 g
7 α ,12 α -Dihydroxy-5 β -cholanolic Acid	Ionic	305705	100 mg
<i>n</i> -Dodecanoylsucrose	Non-Ionic	324374	1 g 5 g
<i>n</i> -Dodecyl- β -D-glucopyranoside	Non-Ionic	324351	1 g
<i>n</i> -Dodecyl- β -D-maltoside, ULTROL® Grade	Non-Ionic	324355	500 mg 1 g 5 g 25 g
ELUGENT™ Detergent, 50% Solution	Non-Ionic	324707	100 ml
EMPIGEN® BB Detergent, 30% Solution	Zwitterionic	324690	100 ml
GENAPOL® C-100, PROTEIN GRADE® Detergent, 10% Solution	Non-Ionic	345794	50 ml
GENAPOL® X-80, PROTEIN GRADE® Detergent, 10% Solution	Non-Ionic	345796	50 ml
GENAPOL® X-100, PROTEIN GRADE® Detergent, 10% Solution	Non-Ionic	345798	50 ml
Glycocholic Acid, Sodium Salt	Ionic	360512	1 g 5 g
Glycodeoxycholic Acid, Sodium Salt	Ionic	361311	5 g
Glycoursodeoxycholic Acid, Sodium Salt	Ionic	362549	1 g
HECAMEG	Non-Ionic	373272	1 g 5 g
<i>n</i> -Heptyl- β -D-thioglucopyranoside	Non-Ionic	375655	1 g
<i>n</i> -Heptyl- β -D-thioglucopyranoside, ULTROL® Grade, 10% Solution	Non-Ionic	375659	10 ml 50 ml
<i>n</i> -Hexyl- β -D-glucopyranoside	Non-Ionic	376965	1 g
Lauroylsarcosine, Sodium Salt	Ionic	428010	5 g
LPD-12	Ionic	437600	1 mg 2 mg
MEGA-8, ULTROL® Grade	Non-Ionic	444926	1 g 5 g
MEGA-9, ULTROL® Grade	Non-Ionic	444930	5 g
MEGA-10, ULTROL® Grade	Non-Ionic	444934	5 g
<i>n</i> -Nonyl- β -D-glucopyranoside	Non-Ionic	488285	1 g
<i>n</i> -Octanoyl- β -D-glucosylamine (NOGA)	Non-Ionic	488100	500 mg 1 g
<i>n</i> -Octanoylsucrose	Non-Ionic	494466	5 g
<i>n</i> -Octyl- β -D-glucopyranoside	Non-Ionic	494459	500 mg 1 g 5 g 25 g
<i>n</i> -Octyl- β -D-glucopyranoside, ULTROL® Grade	Non-Ionic	494460	250 mg 1 g 5 g
<i>n</i> -Octyl- β -D-maltopyranoside	Non-Ionic	494465	1 g
<i>n</i> -Octyl- β -D-thioglucopyranoside, ULTROL® Grade	Non-Ionic	494461	1 g 5 g

Guidelines For Choosing a Detergent

A membrane protein is considered solubilized if it is present in the supernatant after one hour centrifugation of a lysate or a homogenate at 100,000 x g. In most cases, it is also important that the biological activity of the protein be preserved in the supernatant after solubilization by a detergent. Hence, the appropriate detergent should yield the maximum amount of biologically active protein in the supernatant. Given the large number of detergents available today, choosing an appropriate detergent can be a difficult process. Some of the points outlined below can be helpful in selecting a suitable detergent.

1. The first step is a survey of the literature. A detergent that has been used previously for the isolation and characterization of a protein with similar biochemical or enzymological properties should be tried first.
2. Solubility of the detergent at working temperature can be another consideration. For example, ZWITTERGENT® 3-14 is insoluble in water at +4°C while TRITON® X-114 undergoes a phase separation at room temperature.
3. The method of detergent removal can be an important consideration. If dialysis is to be employed, a detergent with a high CMC is clearly preferred. Alternatively, if ion exchange chromatography is utilized, a non-ionic detergent or a ZWITTERGENT® is the detergent of choice.
4. Preservation of biological or enzymological activity may require experimenting with several detergents. Not only the type but also the quantity of the detergent used will affect the activity of the protein. For some proteins biological activity is preserved over a very narrow range of concentration of detergent. Below this range the protein is not solubilized and above a particular concentration, the protein is inactivated.
5. Since TRITON® X-100 contains aromatic rings that absorb at 260–280 nm, this detergent should be avoided if the protocols require UV monitoring of protein concentration. Similarly, ionic detergents should be avoided if the proteins are to be separated by isoelectric focusing. For gel filtration of proteins, detergents with smaller aggregation numbers should be considered.
6. Detergents of utmost purity should be used since some detergents such as TRITON® X-100 are generally known to contain peroxides as contaminants. CALBIOCHEM®'s PROTEIN GRADE® or ULTROL® GRADE detergents that have been purified to minimize these oxidizing contaminants are recommended.
7. CALBIOCHEM® biochemicals also offers a variety of Molecular Biology Grade detergents for any research where contaminants such as DNase, RNase, and proteases are problematic.
8. A non-toxic detergent should be preferred over a toxic one. For example, digitonin, a cardiac glycoside, should be handled with special care.
9. For as yet unknown reasons, specific detergents often work better for particular isolation procedures. For example, EMPIGEN® BB (Cat. No. 324690) has been found to be the most efficient detergent for the solubilization of keratins while preserving their antigenicity. Similarly, *n*-Dodecyl-β-D-maltoside (Cat. No. 324355) has been found to be the detergent of choice for the isolation of cytochrome c oxidase. Hence, some "trial and error" may be required for determining optimal conditions for isolation of a membrane protein in its biologically active form.
10. In some cases, it has been observed that the inclusion of non-detergent sulfo-betaines (NDSBs) with detergents in the isolation buffer dramatically improves yields of solubilized membrane proteins.

Product	Type	Cat. No.	Size
NP-40 Alternative	Non-ionic	492016	100 ml 500 ml 1 L
NP-40, PROTEIN GRADE® Detergent, 10% Solution	Non-ionic	492017	50 ml
PLURONIC® F-127, PROTEIN GRADE® Detergent, 10% Solution	Non-ionic	540025	50 ml
PMAL-B-100	Zwitterionic	528200	1 g
Saponin	Non-ionic	558255	100 g
Sodium <i>n</i> -Dodecyl Sulfate (SDS)	Ionic	428015	1 kg
Sodium <i>n</i> -Dodecyl Sulfate (SDS), 20% Solution	Ionic	428018	200 ml
Sodium <i>n</i> -Dodecyl Sulfate (SDS), High Purity	Ionic	428016	25 g
Sodium <i>n</i> -Dodecyl Sulfate (SDS), Molecular Biology Grade	Ionic	428023	50 g 500 g
Taurochenodeoxycholic Acid, Sodium Salt	Ionic	580211	1 g 5 g
Taurocholic Acid, Sodium Salt	Ionic	580217	5 g 25 g
Taurocholic Acid, Sodium Salt, ULTROL® Grade	Ionic	580218	1 g 5 g
Taurodehydrocholic Acid, Sodium Salt	Ionic	580219	1 g
Taurodeoxycholic Acid, Sodium Salt	Ionic	580221	5 g 50 g
Tauroursodeoxycholic Acid, Sodium Salt	Ionic	580549	1 g 5 g
<i>n</i> -Tetradecyl-β-D-maltoside	Non-ionic	583802	1 g
TOPPS	Ionic	615000	5 g
TRITON® X-100	Non-ionic	648462	1 kg 3 kg
TRITON® X-100, Hydrogenated	Non-ionic	648465	10 g
TRITON® X-100, Hydrogenated, PROTEIN GRADE® Detergent, 10% Solution	Non-ionic	648464	10 ml
TRITON® X-100, Molecular Biology Grade	Non-ionic	648466	50 ml
TRITON® X-100, PROTEIN GRADE Detergent, 10% Solution	Non-ionic	648463	50 ml
TRITON® X-114, PROTEIN GRADE Detergent, 10% Solution	Non-ionic	648468	50 ml
TWEEN® 20	Non-ionic	655205	250 ml
TWEEN® 20, Molecular Biology Grade	Non-ionic	655204	100 ml
TWEEN® 20, PROTEIN GRADE Detergent, 10% Solution	Non-ionic	655206	50 ml
TWEEN® 80, PROTEIN GRADE Detergent, 10% Solution	Non-ionic	655207	50 ml
<i>n</i> -Undecyl-β-D-maltoside, ULTROL® Grade	Non-ionic	662085	500 mg 1 g
Ursodeoxycholic Acid, Sodium Salt	Ionic	672305	1 g
ZWITTERGENT® 3-08 Detergent	Zwitterionic	693019	5 g
ZWITTERGENT® 3-10 Detergent	Zwitterionic	693021	5 g 25 g 100 g
ZWITTERGENT® 3-12 Detergent	Zwitterionic	693015	5 g 25 g
ZWITTERGENT® 3-14 Detergent	Zwitterionic	693017	5 g 25 g 100 g
ZWITTERGENT® 3-16 Detergent	Zwitterionic	693023	5 g 25 g

Non-Detergent Sulfobetaines (NDSBs)

Product	Type	Cat. No.	Size
NDSB-195	NDSB	480001	5 g 25 g
NDSB-201	NDSB	480005	25 g 250 g
NDSB-211	NDSB	480013	1 g 5 g
NDSB-221	NDSB	480014	5 g 25 g
NDSB-256	NDSB	480010	5 g 25 g

We Offer the Convenience of Sets!

APO Detergent Set

Cat. No. 178400 1 set

Contains 1 g each of the following non-ionic detergents: APO-8, APO-9, APO-10, APO-11, and APO-12.

Detergent Variety Pack

Cat. No. 263458 1 pack

Contains 1 g each of the following components: CHAPS, Deoxycholic Acid, *n*-Octyl- β -D-Glucopyranoside, *n*-Octyl- β -D-thioglucopyranoside, and ZWITTERGENT® 3-14.

ZWITTERGENT® Test Kit

Cat. No. 693030 1 kit

Contains 1 g each of the following components: ZWITTERGENT® 3-08, ZWITTERGENT® 3-10, ZWITTERGENT® 3-12, ZWITTERGENT® 3-14, and ZWITTERGENT® 3-16.

Detergent Test Kit

Cat. No. 263451 1 kit

Contains 1 g each of the following components: *n*-Hexyl-, *n*-Heptyl-, *n*-Octyl-, and *n*-Nonyl- β -D-glucopyranoside, and *n*-Dodecyl- β -D-maltoside.

NDSB Set

Cat. No. 480012 1 set

Contains 5 g each of NDSB-195, NDSB-256, and 25 g of NDSB-201.

ASB ZWITTERGENT® Set

Cat. No. 182753 1 set

Contains 1 g each of the following zwitterionic amidosulfobetaine (ASB) detergents: ASB-14, ASB-16, and ASB-C8Ø.

ProteoDetergent™ Set

The set contains 10 g of Triton® X-100 (Cat. No. 648462) and 1 g each of ASB-14 (Cat. No. 182750), ASB-14-4 (Cat. No. 182751), ASB-16 (Cat. No. 182755), ASB-C8Ø (Cat. No. 182730), CHAPS (Cat. No. 220201), *n*-Dodecyl- β -D-maltopyranoside (Cat. No. 324355), and Zwittergent® 3-10 (SB 3-10, Cat. No. 693021).

Cat. No. 539751 1 set

Detergent Adsorption Capacity of CALBIOSORB™ Adsorbent

Detergent	Mol. Wt.	Type	Adsorption Capacity (mg detergent/ml resin)
Cetyltrimethylammonium Bromide (CTAB)	364.5	Cationic	120
CHAPS	614.9	Zwitterionic	110
Cholic Acid, Sodium Salt	430.6	Anionic	73
<i>n</i> -Dodecyl- β -D-maltoside	510.6	Non-ionic	66
<i>n</i> -Hexyl- β -D-glucopyranoside	264.3	Non-ionic	78
Lauryldimethylamine Oxide	229.4	Zwitterionic	66
<i>n</i> -Octyl- β -D-glucopyranoside	292.4	Non-ionic	132
Sodium Dodecyl Sulfate (SDS)	288.5	Anionic	94
<i>n</i> -Tetradecyl- β -D-maltoside	538.6	Non-ionic	161
TRITON® X-100 Detergent	647.0 (Av.)	Non-ionic	157
TWEEN® 20, PROTEIN GRADE® Detergent	1228.0 (Av.)	Non-ionic	122

Detergent adsorption capacities were measured by allowing 1.0 g of buffer-free CALBIOSORB™ Adsorbent to equilibrate at room temperature with an excess of detergent (10 ml of 2.0% in H₂O) for 24 hours, then measuring the amount of unabsorbed detergent remaining in the supernatant by gravimetric analysis.

CALBIOSORB™ Adsorbent

Cat. No. 206550 50 ml

CALBIOSORB™ Adsorbent, Prepacked Columns


Cat. No. 206552 1 set

Note: 1 set contains 3 columns

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web: www.calbiochem.com

e-mail: technical@calbiochem.com

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