PanReac AppliChem
ITW Reagents

infoPoint 1

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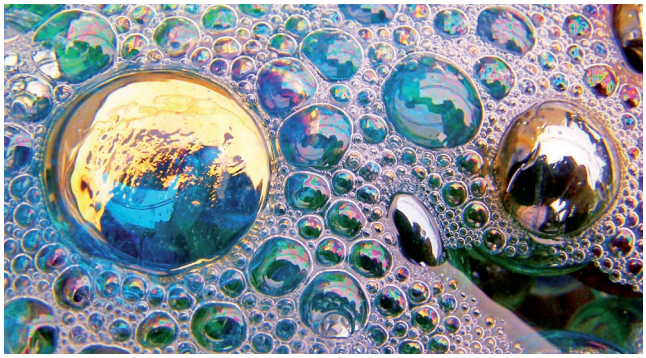
Detergents

Detergents are also called surfactants or surface-active agents. They are soluble both in aqueous solutions and in non-polar organic solvents and can influence the solubility of other molecules (such as lipids or hydrophobic proteins in buffer solutions).

Detergents are widely used in biochemistry, cell biology or molecular biology. Cell lysis, protein solubilization, protein crystallization or reduction of background staining in blotting experiments are just a few of numerous applications.



Examples of Applications

Purification

- Proteins in Protein Expression, stabilize proteins, study of the conformation and function of proteins
- DNA / RNA, as component of a lysis buffer (lysis of cell nuclei)

Solubilization

- Membranes
- Organelles
- Membrane proteins without denaturing them

Blotting (Proteomics and Electrophoresis)

- Southern
- Western
- Northern
- ELISA, or other immunostaining

Electrophoresis

- Amino acid and protein separation (SDS-PAGE)
- Capillary electrophoresis

Chromatography

- Stein-Moore (amino acid content analysis)

First of all, we present one special detergent. This is **Digitonin**. It is a non-ionic detergent from the group of saponins, isolated from the seeds of *Digitalis purpurea*.

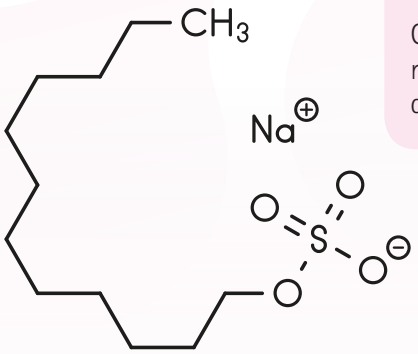
It was reported for extraction of membrane proteins, isolation of mytochondria, permeabilization of cell membranes, Ca^{2+} studies and precipitation of cholesterine. We also offer extracted Saponin from Quillaja Bark.

Product Name	Code	Package
Digitonin (Reag. USP) BioChemica	A1905,0500	500 mg
	A1905,0001	1 g
	A1905,0005	5 g
Saponin from Quillaja Bark pure	A2542,0100	100 g
	A2542,0500	500 g
	A2542,1000	1 kg

Ionic detergents contain a negatively (anionic detergent) or positively (cationic detergent) charged hydrophilic head group. The hydrophobic part is an alkyl chain (as for SDS, CTAB or alkyl sulfonic acids) or a more complicated steroidal structure as a bile acid salt (like cholate and deoxycholate).

Anionic detergent **Sodium Dodecyl Sulfate (SDS)** is one of the worldwide mostly used detergents in biological research.

SDS breaks the non-covalent bonds in proteins, denaturing them and making them to lose their native configuration.



Sodium dodecyl sulfate

Combined treatment with a disulfide reducing agent (β-mercaptoethanol or dithiothreitol) fully deploys the protein.

The monomeric SDS is strongly bound to most proteins at a ratio of 1.4 mg SDS / mg protein.

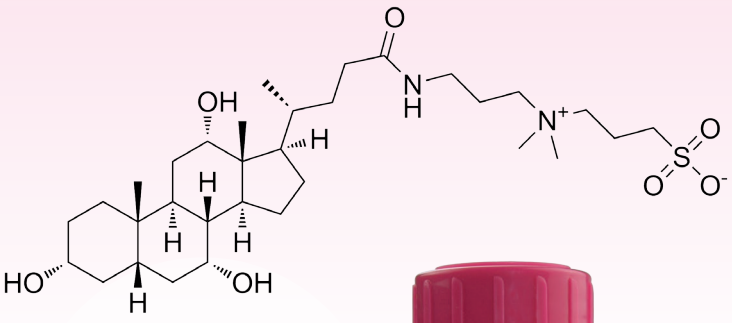
Product name	M (g/mol)	CMC (25 °C)	Code	Package
SDS for analysis, ACS	288.38	8.2 mM	132363.1207	50 g
			132363.1209	250 g
			132363.0914	5 kg
SDS (USP-NF, BP, Ph. Eur.) pure, pharma grade	288.38	8.2 mM	142363.1209	250 g
			142363.1211	1000 g
			142363.0914	5 kg
SDS for molecular biology	288.38	8.2 mM	A2263,0100	100 g
			A2263,0500	500 g
			A2263,1000	1 kg
SDS ultrapure	288.38	8.2 mM	A1112,0100	100 g
			A1112,0500	500 g
			A1112,1000	1 kg
SDS BioChemica	288.38	8.2 mM	A2572,0250	250 g
			A2572,0500	500 g
			A2572,1000	1 kg
SDS grained pure	288.38	8.2 mM	A7249,0500	500 g
			A7249,1000	1 kg
			A7249,5000	5 kg
SDS - Solution 20 % for molecular biology	288.38		A0675,0250	250 ml
			A0675,0500	500 ml
			A0675,1000	1 L
SDS - Solution 20 % pure	288.38		A3942,1000	1 L
SDS - Solution 10 % for molecular biology	288.38		A0676,0250	250 ml
			A0676,0500	500 ml
			A0676,1000	1 L
SDS - Solution 10 % pure	288.38		A3950,1000	1 L
SDS 0.004 mol/l volumetric solution	288.38		182792.1211	1 L
SDS-Tris-Glycine buffer (10X) BioChemica			A1415,1000	1 L

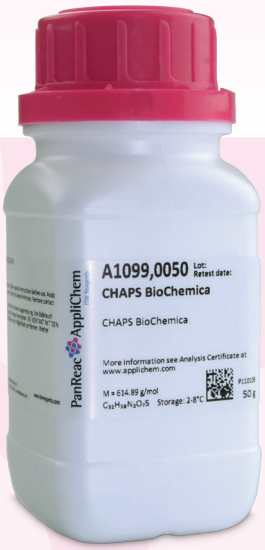
Cetyltrimethylammonium Bromide (CTAB) is a cationic detergent. In biochemistry it is mainly used in DNA extraction, especially of plants, in chromatography, in CTAB-Page and many more applications of chemical procedures and conservation.

Product name	M (g/mol)	CMC (25 °C)	Code	Package
Cetyltrimethylammonium Bromide for molecular biology	364.46	0.92 mM	A6284,0100	100 g
			A6284,0500	500 g
Cetyltrimethylammonium Bromide BioChemica	364.46	0.92 mM	A0805,0100	100 g
			A0805,0500	500 g

Zwitterionic detergents like **CHAPS** or sulfobetaine, combine the features of ionic and non-ionic detergents. Like non-ionic detergents they have no net charge. Consequently they show no electrophoretic mobility and do not bind to ion-exchange resins. Compared to ionic detergents, their CMC values are less sensitive to changes in ion concentration, but they have in common to break protein-protein interactions efficiently (denaturating effect).

The detergent CHAPS is a derivative of cholate; suitable for experiments that require functional proteins in their native state. Easy to remove by dialysis.





Product name	M (g/mol)	CMC (25 °C)	Code	Package
CHAPS BioChemica	614.89	4.2 – 6.3 mM	A1099,0005	5 g
			A1099,0025	25 g
			A1099,0050	50 g

Non-ionic detergents have uncharged hydrophilic head groups. The CMC value and micellar size of this grou of detergents is mainly affected by temperature (the higher the temperature, the higher the CMC), not by ion strength.

Non-ionic detergents are generally non-denaturating and are therefore rst choice for applications that require preservation of protein structure and activity. They are mild detergents that primarily break lipid-lipid and lipid-protein interactions, while protein-protein interactions stay unaffected. Especially alkyl glycosides and maltosides are suitable for isolation of biologically active membrane proteins. The advantages over polyoxyethylene detergents are e.g. homogenity in composition and structure (many polyoxyethylenes are composed of several homologues) and a lack of absorbance at 280 nm.

Product name	M (g/mol)	CMC (25 °C)	Code	Package
Brij® 35 aqueous solution 30% w/v for clinical diagnosis		0.092 mM	252317.1611	1 L
Brij® 35 solution 10 % peroxide-free		0.092 mM	A1286,0100	100 ml
n-Dodecyl- -D-Maltoside BioChemica	510.63	0.15 – 0.19 mM	A0819,0001	1 g
			A0819,0005	5 g
n-Octyl- -D-Glucopyranoside BioChemica	292.38	25 - 30 mM	A1010,0010	10 g
			A1010,0025	25 g
			A1010,0100	100 g
n-Octyl- -D-Glucopyranoside pure	292.38	25 - 30 mM	Z46373.1211	1 kg
Pluronic® F-68 BioChemica		~8400	A1288,0100	100 g
			A1288,0500	500 g
Triton® X 100 for molecular biology	646.85	0.3 mM	A4975,0100	100 ml
			A4975,0500	500 ml
			A4975,1000	1 L
Triton® X-100 solution 10 % peroxide-free			A1287,0100	100 ml
Tween® 80 BioChemica	1310	0.012 mM	A1390,0500	500 ml
			A1390,1000	1 L
Tween® 80 (USP-NF, BP, Ph. Eur.) pure, pharma grade			142050.1611	1000 ml
			142050.1214	5 L
Tween® 20 for molecular biology	1227.72	0.059 mM	A4974,0100	100 ml
			A4974,0250	250 ml
			A4974,0500	500 ml
			A4974,1000	1 L
Tween® 20 (USP-NF, BP, Ph. Eur.) pure, pharma grade			142312.1611	1 L
			142312.1214	5 L
Tween® 20 solution 10 % peroxide-free			A1284,0100	100 ml

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