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## Product Information Sheet

### Ordering Information

Product Number:	16885
Product Name:	Streptavidin
Unit Size:	1 mg
Storage Conditions:	Freeze (<-15 °C), Minimize light exposure
Expiration Date:	12 months upon receiving

### Chemical and Spectral Properties

Appearance:	Solid
Molecular Weight:	N/A
Soluble In:	Water
Excitation Wavelength:	N/A
Emission Wavelength:	N/A

### Application Notes

Streptavidin is a biotin-binding protein found in the culture broth of the bacterium *Streptomyces avidinii*. Streptavidin binds 4 moles of biotin per mole of protein with a high affinity virtually unmatched in nature. Streptavidin lacks carbohydrate side chains present on avidin and has an isoelectric point nearer to neutrality where most useful biological interactions occur (pI of 5-6 vs 10 for avidin). As a result, streptavidin frequently exhibits lower levels of non-specific binding than does avidin when the proteins are used in applications relying upon the formation of avidin/biotin complexes. Streptavidin is readily soluble in water or buffers. There is a tendency for lyophilized streptavidin to aggregate when it is re-dissolved in water or other low ionic strength buffers at neutral or acidic pH. In ELISA-based diagnostic systems, antibodies directed against a particular antigen may be covalently attached to reporter enzymes. Antigens are then quantitated by enzymatic assay after binding to these conjugated molecules. Unfortunately, the precise conditions for accomplishing such covalent attachments must be determined individually for each antibody/reporter combination, and often result in significant loss of either the enzymatic activity of the reporter enzyme or the binding functions of the antibodies. Streptavidin finds utility in these systems because antibody molecules are easily modified by the covalent attachment of derivatives of biotin with little or no loss in the ability of the antibody molecules to bind their antigens. These biotinylated antibodies may be detected by their interaction with conjugates of streptavidin and the reporter enzymes. The same preparation of conjugated streptavidin reporter enzyme may be used with any number of different biotinylated antibodies making this system a highly flexible one. The reporter molecule may be bound to streptavidin covalently, or biotinylated and attached to streptavidin via the streptavidin-biotin interaction. Since streptavidin is multivalent (binding 4 molecules of biotin per tetrameric protein molecule) it may be used in combination with biotinylated antibody and biotinylated reporter enzymes to obtain amplified signals. Such amplification in ELISA's is otherwise difficult to obtain and requires the introduction of additional antibody components. ELISA systems employing streptavidin can readily detect sub-nanogram amounts of antigens. Streptavidin conjugates are widely used together with a conjugate of biotin for specific detection of a variety of proteins, protein motifs, nucleic acids and other molecules since streptavidin has a very high binding affinity for biotin. This RPE-streptavidin conjugate comprises streptavidin (as the biotin-binding protein) with RPE covalently attached (as the fluorescent label). It is commonly used as a second step reagent for indirect immunofluorescent staining, when used in conjunction with biotinylated primary antibodies. It is a very valuable tool for biotin-streptavidin-based biological assays and tests using flow cytometry, microplate reader and microarray platforms.