Product Specifications

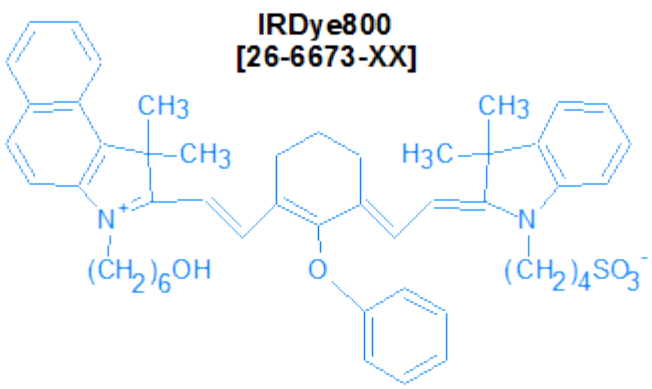
Custom Oligo Synthesis, antisense oligos, RNA oligos, chimeric oligos, Fluorescent dyes, Affinity Ligands, Spacers & Linkers, Duplex Stabilizers, Minor bases, labeled oligos, Molecular Beacons, siRNA, phosphonates Locked Nucleic Acids (LNA); 2'-5' linked Oligos

Oligo Modifications

For research use only. Not for use in diagnostic procedures for clinical purposes.

IRDye 800-N

Category	Fluorescent Dyes
Modification Code	IRD800-N
Reference Catalog Number	26-6673
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	999.3



This modification is a post synthesis conjugation to a primary amino group thus an additional modification with an amino group is required. A C3, C6 or C12 amino group can be placed at the 5' or for the 3' end a C3 or C7 amino and for internal positions an amino modified base is used, e.g Amino dT C6.

IRDye 800 NHS Alternate

Fluorophore Name

Excitation Max, nm +/-10

Emission Max, nm +/-10

Extinction Coefficient*

cy7.5 NHS 788 808 223,000

IRDye 800 NHS 795 819 240,000 * Extinction coefficient at λ (max) in cm-1M-1. ** Typical emission color seen through the eyepiece of a conventional fluorescence microscope with appropriate filters. Near-IR region. Human vision is insensitive to light beyond ~650 nm; it is not possible to view near-IR fluorescent dyes.

Click here for a list of fluorophores.
YIELD
NHS based modifications are post synthesis conjugation performed using a primary amino group. The yield is lower as compared to direct automated coupling of modifications that are available as amidites. Approximate yield for various scales are given below.
~2 nmol final yield for 50 nmol scale synthesis.
~5 nmol final yield for 200 nmol scale synthesis.
~16 nmol final yield for 1 umol scale synthesis

IRDye800 is a near-IR fluorescent dye used for labeling oligonucleotides. IRDye800 has an absorbance maximum of 778 nm and an emission maximum of 794 nm.

The combination of narrow absorbance/emission bands and low-background autofluorescence in the IR region results in higher S/N ratios and thus enhanced detection sensitivity compared with fluorophores with absorbance/emission maxima in the visible region (1). IRDye800 is used as a reporter moiety in real-time PCR applications. For such probes, IRDye800 is most commonly paired with the dark quencher QC-1, as the two have excellent spectral overlap (2).

IRDye800 can be used to label DNA oligos for use as hybridization probes in a variety of in vivo and in vitro research or diagnostic applications, as well as for structure-function studies of DNA, RNA, and protein-oligonucleotide complexes. Oligos labeled with IRDye800 at the 5'-end can be used as PCR and Sanger DNA sequencing primers to generate fluorescently-labeled PCR, sequencing or genetic analysis (AFLP, microsatellite) products (3-5).

Near Infrared Fluorophore Spectral Data & Quencher Selection Guide

Fluorophore Name

Excitation Max, nm +/-10

Emission Max, nm +/-10

Extinction Coefficient*

Color**

Quencher

Cy5 650 665 250,000

IRDye 650 NHS 650 665 230,000

AZ647 NHS 655 680 191,800

Cy5.5 684 710 198,000

IRDye 700 NHS 684 710 288,000

Cy7 NHS 740 773 199,000

IRDye 750 NHS 756 776 260,000

cy7.5 NHS 788 808 223,000

IRDye 800 NHS 795 819 240,000

*** Extinction coefficient at λ (max) in cm-1M-1. ** Typical emission color seen through the eyepiece of a conventional fluorescence microscope with appropriate filters. Near-IR region. Human vision is insensitive to light beyond ~650 nm; it is not possible to view near-IR fluorescent dyes.**

Click here for a list of fluorophores.

Click here for list of quenchers.

References

1. Middendorf, L.R., Bruce, J.C., Eckles, R.D., Grone, D.L., Roemer, S.C., Sloniker, G.D., Steffens, D.L., Sutter, S.L., Brumbaugh, J.A., et al. Continuous, on-line DNA sequencing using a versatile infrared laser scanner/electrophoresis apparatus. *Electrophoresis* (1992), 13: 487-494.
2. Peng X., Chen, H., Draney, D.R., Volcheck, W., Schutz-Geschwender, A., Olive, D.M. A nonfluorescent, broad-range quencher dye for Forster resonance energy transfer assays. *Anal. Biochem.* (2009), 388: 220-228.
3. Yomano, L.P., Scopes, R.K., Ingram, L.O. Cloning, sequencing, and expression of the Zymomonas mobilis phosphoglycerate mutase gene (pgm) in Escherichia coli. *J. Bacteriol.* (1993), 175: 3926-3933.
4. Oetting, W.S., Lee, H.K., Flanders, D.J., Wiesner, T.A., King, R.A. Linkage Analysis with Multiplexed Short Tandem

Repeat Polymorphisms Using Infrared Fluorescence and M13 Tailed Primers. *Genomics* (1995), **30**: 450-458.
5. Myburg, A.A., Remington, D.L, O'Malley, D.M., Sederoff, R.R., Whetton, R.W. High-Throughput AFLP Analysis Using Infrared Dye-Labeled Primers and an Automated DNA Sequencer. *Biotechniques* (2001), **30**: 348-357.