



## 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 680RD-N

Category	Fluorescent Dyes
Modification Code	IRD680RD-N
Reference Catalog Number	26-6647
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	905.4

#### Click here for a list of fluorophores.

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.

Yield of Post Synthesis NHS, Maleimide & Click Ligand Conjugation\* Oligo Scale of Synthesis Yield, nmols 50 nmol 2 nmol 200 nmol 5 nmol 1 umol 16 nmol 2 umol 30 nmol 5 umol 75 nmol 10 umol 150 nmol 15 umol 225 nmol \* The yield will be lower for oligos longer than 50mer. Click here for yield table of long oligos. \* Click here for RNA Oligos scale of synthesis and yield. **NHS Ligand conjugation** requires a primary amino group. Gene Link offers a wide selection of amino modifications for 5', 3' and internal sites. Click here for a list of conjugation chemistry modifications. **Maleimide Ligand conjugation** requires a thiol group. Gene Link offers a wide selection of thiol modifications for 5', 3' and internal sites.

Click here for a list of conjugation chemistry modifications. **Click Chemistry Ligand conjugation** requires a corresponding Click modification; examples Alkyne:Azide, Azide:DBCO, BCN:Azide, BCN: TCO:Tetrazine. Gene Link offers a wide selection of click modifications for 5', 3' and internal sites. Click here for a list of click chemistry modifications.

IRDye700 is a near-IR fluorescent dye used for labeling oligonucleotides. IRDye800 has an absorbance maximum of 680 nm and an emission maximum of 694 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). IRDye700 is used as a reporter moiety in real-time PCR applications. For such probes, IRDye700 is most commonly paired with the dark quencher QC-1, as the two have excellent spectral overlap (2).

IRDye700 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 IRDye700 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**

**AZ680 NHS 678 701 185,000**

**Cy5.5 684 710 198,000**

**IRDye 700 NHS 684 710 288,000**

**AZdye700 NHS 696 719 192,000**

**Atto 700 NHS 699 715 120,000**

**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  $\lambda$  (max) in  $\text{cm}^{-1}\text{M}^{-1}$ . \*\* 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.