



**DNA Technology**

*A Biosearch Technologies Company*

**DYE SELECTION, HANDLING, AND STORAGE**  
*of* **BHQ<sup>®</sup> PROBES**

# BHQ® PROBES PRODUCT INSERT

## PRODUCT DESCRIPTION

Dual-labeled BHQ probes are traditional, linear, FRET probes incorporating a fluorophore and quencher covalently attached to the 5' and 3' ends of an oligo. Dual-labeled BHQ probes are ideal for detecting the presence and quantifying the amount of specific target sequences.

For Research Use Only. Not for use in diagnostic procedures.

## STORAGE GUIDELINES

BHQ (Black Hole Quencher®) probes and primers are shipped dry and can be stored frozen or at +2 to +8 °C in this state for over one year. In this flyer we present general guidelines for handling and storing probes along with other helpful information to ensure your successful amplification.

## SHORT-TERM STORAGE & DAILY USE

Probes should be subjected to a minimum number of freeze-thaw cycles. For daily and short-term use, we recommend that you prepare and store microvials each having sufficient material for a day's set of experiments and store at +2 to +8 °C in the dark for up to a month.

When ready to use, bring a sufficient number of aliquots out of storage and hold in an ice bucket with a lid to minimize exposure to light until ready for use.

## LONG-TERM STORAGE

We recommend freezing probes in the dark at -15 to -30 °C for storage lasting longer than a month.

## PROTECTION FROM PHOTBLEACHING

To ensure optimum activity, fluorescence-quenched probes should always be protected from light and air to avoid photobleaching.

## PREPARATION FOR USE

Probes are best prepared for long-term storage and use by first preparing both a concentrated stock and dilute solutions of probe at a working concentration.

1. Prepare stock and working solutions using one of the following dilution buffers:
  - TE Buffer (10mM Tris.Cl/1 mM EDTA), pH 8.0 (Recommended)
  - DNase-free water
2. Suspend the dry oligo in aqueous or buffered solution to a known stock concentration. Prepare a 100  $\mu$ M stock solution of oligo using the "Total nmol" value of the dry probe on the data file that is e-mailed with every probe order. Multiply by 10 to determine the volume of diluent to add in microliters.
3. Next, dilute a portion of the stock solution to an appropriate working concentration, aliquot into microvials and store refrigerated or frozen.

**Probes should be subjected to a minimum number of freeze-thaw cycles.**











### IMPORTANT NOTE:


The pH of Tris buffers changes significantly with temperature, decreasing approximately 0.028 pH units per 1 °C rise in temperature. Tris-buffered solutions should be adjusted to the desired pH at the temperature at which they will be used. Because the pKa of Tris is 8.08, Tris should not be used as a buffer below pH ~7.2 or above pH ~9.0.



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## BLACK HOLE QUENCHER® AND REPORTER DYE SELECTION CHART

FLUOROPHORE <sup>1</sup>	DYE-5'-T <sub>10</sub>		BHQ Dye
	EX	EM	
 <b>Biosearch Blue™</b>	352	447	BHQ® - 0 $\lambda_{\text{MAX}}$ 493 nm QR=430-520 nm
Acridine	362	462	
Coumarin	432	472	
<b>FAM</b>	495	520	BHQ - 1 $\lambda_{\text{MAX}}$ 534 nm QR=480-580 nm
Rhodamine Green	503	528	
<b>TET</b>	521	536	
 <b>CAL Fluor® Gold 540</b> (VIC/TET/JOE REPLACEMENT)	522	544	
<b>JOE</b>	529	555	
VIC	538	554	
<b>HEX</b>	535	556	BHQ - 2 $\lambda_{\text{MAX}}$ 579 nm QR=560-670 nm
 <b>CAL Fluor Orange 560</b> (VIC/HEX/JOE REPLACEMENT)	538	559	
 <b>Quasar® 570</b> (CY3 REPLACEMENT)	548	566	
<b>TAMRA</b>	557	583	
Rhodamine Red	560	580	
 <b>CAL Fluor Red 590</b> (TAMRA REPLACEMENT)	569	591	
Cy3.5	581	596	
ROX	586	610	
 <b>CAL Fluor Red 610</b> (TEXAS RED® REPLACEMENT)	590	610	
 <b>CAL Fluor Red 635</b> (LC RED 640® REPLACEMENT)	618	637	
 <b>Pulsar® 650</b>	460	650	BHQ - 3 $\lambda_{\text{MAX}}$ 672nm QR=620-730 nm
 <b>Quasar 670</b> (CY5 REPLACEMENT)	647	667	
 <b>Quasar 705</b> (CY5.5 REPLACEMENT)	690	705	

 Indicates Biosearch Technologies' proprietary dyes. Dyes in **BOLDFACE** are standard products available from Biosearch and DNA Technology. These and the BHQ dyes are available in one or more of the following forms: phosphoramidites, CPGs, pre-packaged DNA synthesis columns, carboxy acids, peptide synthesis resins, succinimidyl esters and amine labels.

<sup>1</sup>QR (Quenching Range) stands for each BHQ dye's FRET quenching range. Fluorophore dyes are shown for informational purposes only. Non-Biosearch fluorophores listed may be trademarked by companies other than Biosearch Technologies and may not necessarily be available from DNA Technology, please visit [www.dna-technology.dk](http://www.dna-technology.dk) for full disclosure. Please contact our Customer Service Dept. at [info@dna-technology.dk](mailto:info@dna-technology.dk) or by calling +45 87 32 30 00 to determine current fluorophore availability.

**BHQ-2 dye is recommended for Pulsar 650, Quasar 670, and Quasar 705 dyes due to static quenching.**

## THANK YOU FOR YOUR ORDER!

Thank you for your recent order of custom-synthesized oligonucleotides. These compounds were carefully analyzed throughout production to guarantee that they meet or exceed your expectations for performance upon arrival. You may receive additional product documentation such as paper Certificates of Analysis upon request. To ensure maximum performance from these compounds, please take a moment to review the suggested handling and storage guidelines.



All of us at DNA Technology thank you for your order.

DNA TECHNOLOGY A/S  
CUSTOMER SERVICE

## TECHNICAL SUPPORT

If you require additional information or technical assistance please feel free to e-mail our Technical Support Group at: [info@dna-technology.dk](mailto:info@dna-technology.dk). Our knowledgeable staff is also available for telephone consultation from 8:00 to 17:00, Monday through Friday, Central European Time.

Please contact us at:

+45 87 32 30 00 telephone

+45 87 32 30 11 fax

## SALES SUPPORT

To place an order or check on the status of an order, please contact our Sales Department by telephone at the numbers shown above, or by e-mail at: [order@dna-technology.dk](mailto:order@dna-technology.dk)



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## BLACK HOLE QUENCHER® DYES

*The Inescapable Solution<sup>SM</sup>*

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