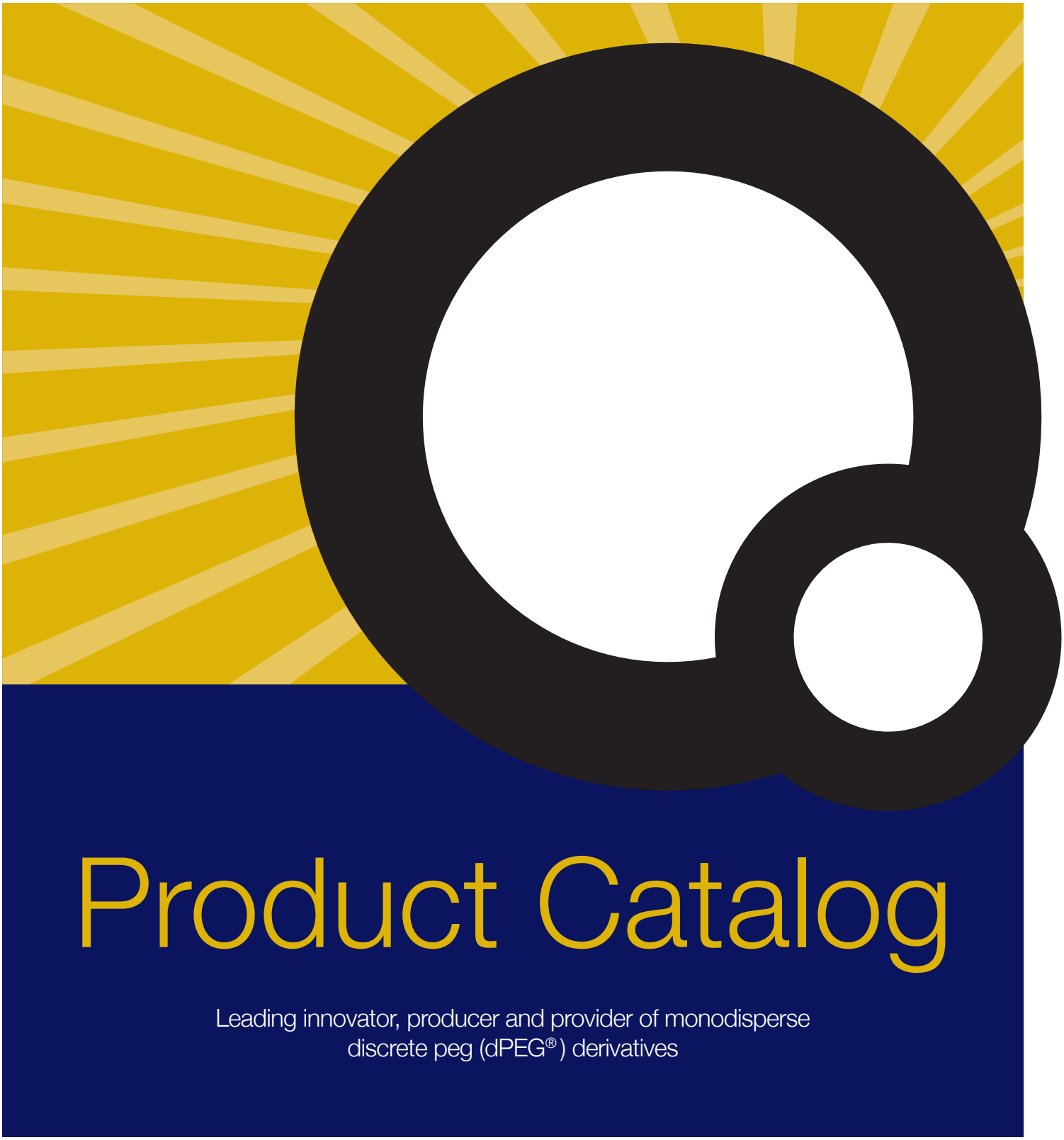

Product Catalog

Leading innovator, producer and provider of monodisperse discrete peg (dPEG®) derivatives

QUANTA BIODESIGN
LIMITED

Fax your orders to 614 760-9781 or **NEW:** Order online at www.quantabiodesign.com

195 West Olentangy Street | Suite O | Powell, Ohio 43065 | Tel: 866 792-9222 | Fax: 614 760-9781 | sales@quantabiodesign.com | www.quantabiodesign.com

Last update 7/10

Quanta BioDesign, Ltd. was founded in March, 1999 in Powell, Ohio by **Paul D. Davis, Ph.D.** for the purpose of developing and commercializing an extensive line of products for companies involved in drug discovery and diagnostic development programs. These products are based on our proprietary discrete polyethylene glycol (dPEG®) chemistries, including our unique processes for making these important compounds. Our single molecular weight ethylene glycol conjugation technology, dPEG®, can eliminate common problems found in the development of diagnostic and therapeutic products, such as aggregation and non-specific interactions, poor water solubility, poor delivery, delivery issues/options, short serum half life, toxicity and antigenicity.

The dPEG® product line is a unique technology platform which can be custom tailored to meet specific physical, chemical and morphological requirements in a broad array of diagnostic and therapeutic applications. Chemistry applications which incorporate dPEG® products include conjugations, simple chemical modifications, cross linking, biotinylation, signal amplification, modification of biological therapeutics and peptide synthesis.

Recently we introduced dPEG® products that offer new delivery options as well. We are involved in developing new cross-linking and labeling chemistries that incorporate the dPEG® technology, and will allow for completely new approaches to existing opportunities in these same areas of therapeutic and diagnostic development, and will revolutionize many of these areas as the new generations of drugs and diagnostics evolve.

Each product is of high purity, a single discrete compound and available in bulk quantities at discounted prices.

Quanta BioDesign, Ltd's dPEG® products are available from R & D material needs to cGMP material needs for Phase II Trials and beyond.

Please also visit our website: www.QuantaBioDesign.com.

LEADING THE WAY
THROUGH MONODISPERSE dPEG™ INNOVATION

Ordering Information

How do I order?

- **Phone:** (866) 792-9222 or (614) 792-2958
  Monday through Friday 9:00 am to 5:00 pm (EST)
- **Fax:** (614) 760-9781 (24 hours, 7 days a week)
- **E-mail:** sales@quantabiodesign.com
- **Website:** www.quantabiodesign.com

Ordering Information needed

- Your name or customer account name
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- Purchase Order # or Credit Card Information or other Payment Method
- Product number and Quantities
- Valid e-mail address (if available)
- If confirmation is requested, please request on the order form
- Orders can be placed any time by fax or e-mail

Payment

We accept MasterCard, Visa, American Express, USD check, and bank transfers. Our banking information will be on the invoice. (Please do not send cash)

Shipping and Storage Details

Products will usually ship the order the same day, if it is received by 3:00pm EST. Most of the compounds we sell are stable under normal conditions. We ship our compounds via Fedex overnight with ice packs or under refrigerated conditions as necessary. Orders outside the United States are shipped by Fedex International Priority. We recommend storing Quanta products in the freezer at -20°C or in the refrigerator at 4° for long term storage. The storage details will be shipped with the product.

No products are shipped or delivered on weekends or U.S. holidays.

General Information

If you have a technical question about a product you received or have seen in the catalog, please send an e-mail to tech@quantabiodesign.comor call us at (614) 792-2958 or (866) 792-9222.

Material Safety Data Sheets

MSDS's are available on our website under each individual product. We can also fax or e-mail a copy. Please mention your request on the order form if needed.

Product Analysis

Quanta BioDesign's products are unique, single molecular weight (MW), discrete PEG (dPEG™) compounds, synthesized de novo from pure, small units (e.g., triethylene glycol or tetraethylene glycol).Purity is assayed by HPLC, TLC, and/or NMR.

Certificate of Analysis

A certificate of analysis (C of A) will be sent with your product(s) if requested. The C of A provides the test method used, the results, and the purity level of the product.

Distributors

United States

Peptides International
11621 Electron Drive
Louisville, Kentucky 40299
Phone: 1-800-777-4779
Fax: (502)-267-1329
Web: www.pepnet.com

VWR International
1310 Goshen Parkway
West Chester, PA 19380
Orders: 800-932-5000
Web: www.vwr.com

ThermoFisher Scientific
P.O. Box 117
Rockford, Illinois 61105
Phone: (800) 874-3723
Fax: (800) 842-5007
Web: www.piercenet.com

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Fax: +49 (0) 30 9489 2351
Web: www.celares.com

Terms and Conditions

Quanta BioDesign, Ltd. owns self-developed technologies, materials and information, as well as accompanying patents, patent applications, know- how and practical knowledge for the production of discrete polyethylene glycols, dPEG®s, and related products.

The following are standard terms of trade and are an integral part of all quotations and sales of Quanta BioDesign, Ltd. to customers, buyers and business enterprises:

1. By placing a Purchase Order, the customer accepts the standard Terms and Conditions of Sale of Quanta BioDesign, Ltd. as binding.

2. Payment terms of sale are net 30 days of date of invoice, unless otherwise stated.

3. Products sold are solely for use by qualified individuals who are experts in their fields for laboratory use only and are not intended to be used for any other purposes, including but not limited to, in vitro diagnostic purposes, in foods, drugs, medical devices, cosmetics or commercial use. Customer represents and warrants to Quanta BioDesign, Ltd. that Buyer will properly test, manufacture, use and market any products purchased from or materials produced from products made or purchased from Quanta BioDesign, Ltd. in strict compliance with all applicable laws and regulations.

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A Tour de force!

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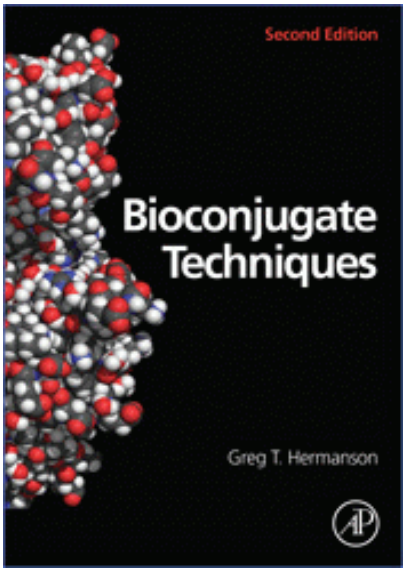
Greg has accomplished a tour de force with his new edition of "Bioconjugate Techniques." It is without a doubt the best and a complete resourcee of those practicing in this very broad field. Not only does he teach us, but he also shows us how to put the chemistry into practice. We also thank Greg for introducing the world to the discrete PEG (dPEG™) in Chapter 18! Thank you, Greg!



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Product #	Description	Price Per Book
10000	Bioconjugate Techniques by Greg T. Hermanson	$75

dPEG®
based
Fluorescent
and other
Dye Labels

Lissamine Rhodamine B sulfonamide-dPEG®$_4$-acid
A fluorescent dPEG® label (5- and 6-mixed isomers)

Product Features and Benefits:

- dPEG®$_4$ pegylation spacer imparts additional water solubility to dye
- Allows incorporation of a water soluble, non-aggregating, non-immunogenic spacer into dye conjugate
- Pegylation Spacer is 19.5 Angstroms in length
- General activation procedure for making the NHS ester: Use EDC and NHS (10-20% moles excess) in methylene chloride to make the NHS ester. Other active esters can be made similarly.

Protocol for in situ activation:

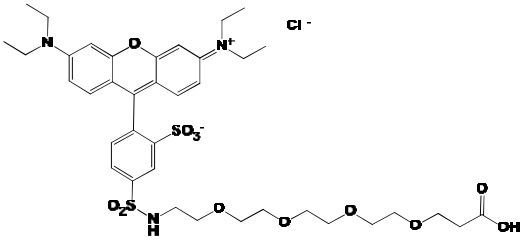
Use a 10-20% molar excess of EDC and NHS in dry methylene chloride (dried over 3 Angstroms molecular sieves). Add a methylene chloride solution of the acid to the dry reagents under dry conditions. Stir for several hours or overnight, then evaporate the solvent and use. Can also treat reaction mixture with a small amount of silica gel to adsorb the excess EDC and the urea by-product, filter, then evaporate the solvent and use.

Note of caution: The NHS should be added with the EDC to prevent formation of the anhydride.

Note: This is just one of many activation methods, others include the use of DSC (N,N'-disuccinimidyl carbonate) and TEA in the appropriate solvent of choice, as well as the use of carbodiimides other than EDC.

Used for peptide labeling using a variety of activating "concoctions," which can also be used for direct coupling to other amines.

Product #	Description	10 mg
10229	Lissamine Rhodamine B sulfonamide-dPEG®$_4$-acid	$175



Mol. Wt.: 805.96; single compound
dPEG® Spacer is 16 atoms and 18 Å

DNP-dPEG®$_x$-NHS ester

Product Features and Benefits:

- x = 4 or 12
- Antigen to attach to carrier protein to make anti-DNP antibodies
- Antigen label for anti-DNP antibodies
- Unique dPEG® containing pegylation labeling reagents with amine reactivity as the activated NHS ester
- Vital NEW type of label carrier in antibody manufacturer
- Also for placing DNP as a probe diagnostic
- Hydrophilic, water solubizing and non-immunogenic/ non-antigenic spacer
- Using this compound in the applications will reduce or eliminate many problems inherent when using conventional chemistry, e.g., immunoreactivity to spacer, non-specific binding, increases water solubility, etc.

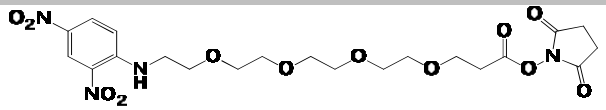
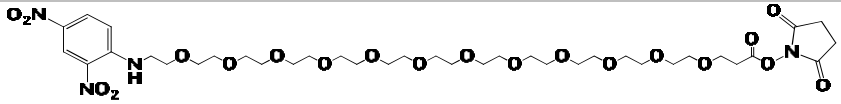
Applications:

Hapten-carrier for anti-DNP antibodies: The DNP-dPEG®$_x$ NHS esters can be used to label a carrier such as KLH for generating anti-DNP antibodies. Using the dPEG®$_x$ spacers not only eliminate the immunogenicity of conventional activation technologies, theyalso enhance the labeling capacity on the carrier by adding water solubility inherent in the dPEG® spacer. The result will be better more specific anti-DNP antibodies.

DNP probe applications: These can potentially used as the DNP label on the probe to which the anti-DNP is being applied, where the probe is amine reactive., including peptides, proteins and oligos/DNA, etc.

Protocol & References:

See Greg T. Hermanson, *Bioconjugate Techniques*, 2nd Ed, Elsevier Inc., Burlington, MA 01803, April, 2008 (ISBN-13: 978-0-12-370501-3; ISBN-10: 0-12-370501-0). See his Chapter 19 especially in hapten-carrier chemistry and applications, as well as Chapter 18 on Discrete PEG pegylation reagents, with much of the chapter featuring our reagents!

Product #	Description	100 mg	1000 mg
10347	DNP-dPEG®$_4$-NHS ester	$200	$1000
			
	Mol. Wt.: 528.47; single compound dPEG® Spacer is 16 atoms and 18.0 Å		
10399	DNP-dPEG®$_{12}$-NHS ester	$250	$1250
			
	Mol. Wt.: 880.89; single compound dPEG® Spacer is 40 atoms and 46.4 Å		

DNP-dPEG®$_x$-acid

Product Features and Benefits:

- x = 4 or 12
- Unique dPEG® containing pegylation labeling reagent with amine reactivity
- Activate the acid activated *in situ,* e.g., EDC/NHS
- Vital NEW
- type of label carrier in antibody manufacturer
- Also for placing DNP as a probe diagnostic
- Hydrophilic, water solubizing and non-immunogenic/ non-antigenic spacer
- Using this compound in the applications will reduce or eliminate many problems inherent when using conventional chemistry, e.g., immunoreactivity to spacer, non-specific binding, increases water solubility, etc.

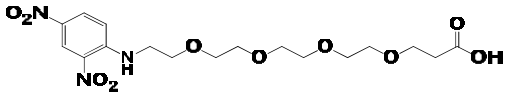
Applications:

Hapten-carrier for anti-DNP antibodies: The DNP-dPEG®$_x$ acids (also see PN 10347 & 10399, the NHS ester) can be used to label a carrier such as KLH for generating anti-DNP antibodies. Using the dPEG® as a spacer not only eliminates the immunogenicity of conventional activation technologies, as well as enhancing the labeling capacity on the carrier by adding water solubility inherent in the dPEG® spacer. The result will be better, more specific anti-DNP antibodies.
DNP probe applications: This can potentially used as the DNP label on the probe to which the anti-DNP is being applied, where the probe is amine reactive., including peptides, proteins and oligos/DNA, etc.

Protocol & References:

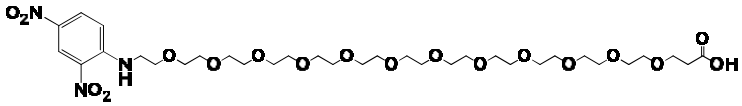
See Greg T. Hermanson, *Bioconjugate Techniques*, 2nd Ed, Elsevier Inc., Burlington, MA 01803, April, 2008 (ISBN-13: 978-0-12-370501-3; ISBN-10: 0-12-370501-0). See his Chapter 19 especially in hapten-carrier chemistry and applications, as well as Chapter 18 on Discrete PEG pegylation reagents, with much of the chapter featuring our reagents!

Product #	Description	100 mg	1000 mg
10346	DNP-dPEG®$_4$-acid	$175	$900



Mol. Wt.: 431.39; single compound
dPEG® Spacer is 16 atoms and 18.0 Å

10398	DNP-dPEG®$_{12}$-acid	$225	$1125



Mol. Wt.: 783.82; single compound
dPEG® Spacer is 45 atoms and 50 Å