

BIO-RADIATIONS

Number 1, September, 1965

Published at Leisure by BIO-RAD LABORATORIES 32 & Griffin Ave., Richmond, Calif.

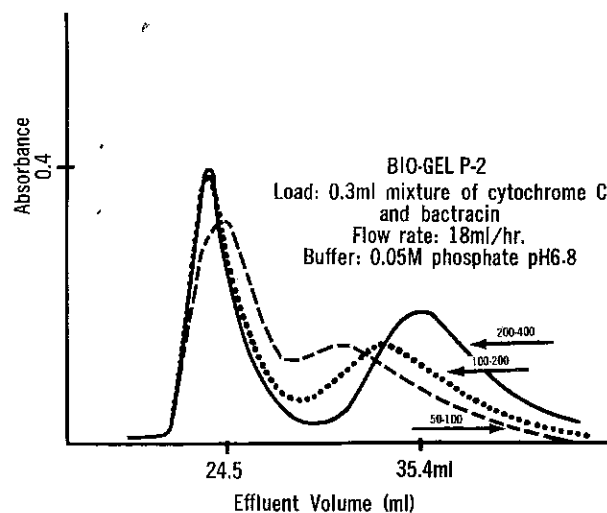
OUR RAPID PEPTIDE DESALTER Higher Resolution at Lower Price

Our rapid peptide desalter, Bio-Gel P-2, has successfully desalted bacitracin, ADP, ATP, streptomycin, leucine and a host of other proteins, peptides, nucleosides, nucleotides and some amino acids. All of this was done with the two bead sizes available at the time: 50-100 and 100-200 mesh. Now for separations and desaltings that require an even finer degree of resolution we offer this gel filtration material in an even smaller mesh size: 200-400 mesh spherical beads that will give sharper peaks, superior separations and less dilution than either of the original two.

Also, another bit of good news: We found a way to reduce costs on Bio-Gel P-2 and pass the savings on to you in the form of lower prices for the 50-100 and 100-200 mesh sizes. And finally, Thin Layer Chromatography enthusiasts can now have this same Bio-Gel P-2 in a particle size suitable for TLC plates—minus 400 mesh, which means that all the material will pass through a 400 mesh sieve. (Prices, flow rates, water regains and hydrated bed volumes are shown at the end of this article.)

Reducing the size of the spherical beads makes a remarkable difference in the resolving power of Bio-Gel P-2. The curve shown below illustrates this in a comparative way, comparative in that no absolute values are used. Notice that if you keep the flow rate constant the separation of bacitracin and cytochrome C becomes sharper as the particle size goes down. For example, the cytochrome C peak on the 200-400 mesh is con-

siderably sharper than on either of the other two and, in addition, there is less intermixing of the components. As you might expect from this the 100-200 mesh size shows a sharper peak and less intermixing than the 50-100 mesh.



There are many instances where complete separation or desalting can be made with any of the three, and in these cases speed becomes the most important consideration. For example, bacitracin can be quantitatively desalted from NaCl with the 50-100 mesh beads (as shown on p. 43 of our Price List Q with the green cover). You can desalt bacitracin quantitatively with the 100-200 or the 200-400 mesh beads, but the 50-100 mesh will have a flow rate for this operation of about 200 ml/cm²/hr., considerably faster than the others.

Speed must be balanced against degree of resolution when you are selecting the proper particle size. If the two components are far apart in molecular weight and if speed is the primary factor we suggest you start with 50-100 mesh beads. If minimum dilution is your main consideration you might start with the 200-400 mesh

size. Unfortunately, there doesn't seem to be any easy formula for automatically selecting the proper mesh size, so until more data is accumulated it will remain a hunt and peck method. TLC people, of course, again have it real easy: there's only one size to choose from.

Bio-Gel P-2 Ordering Information

Catalog Number	Particle Size Wet Mesh	Price per Package		Flow Rates ml/cm ² /hr	Hydrated Bed Volume ml/gm dry gel	Water Regain grams water/gram dry gel
		100 gm	500 gm			
67002	50-100	\$14.00	\$61.00	250	3.8	1.6
67005	100-200	16.25	69.25	70	3.8	1.6
67006	200-400	18.90	81.50	45	3.8	1.6
67008	minus 400	24.00	98.00	4.5	3.8	1.6

Minimum flow rate data was obtained on columns 1.3 cm ID X 13 cm, with a water head kept between 58 and 62 cm.

A WORD FROM THE EDITOR

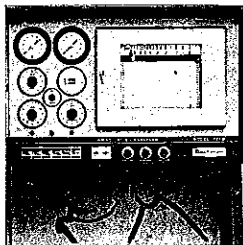
It is traditional for the editor of a new publication to throw out the first ball and make a pitch for the pages of words he has compiled. We checked with the editor's manual on etiquette to see if this is mandatory or even expected in the case of company publications like Bio-Radiations, but to our deep regret there was no listing for this category. Despite the lack of precedence we are nevertheless plunging ahead. Here, then, is our pitch.

We feel that business should be **fun**, **useful** and **profitable**—although not necessarily in that particular order. Bio-Radiations will reflect these feelings. We will do our best to make the articles entertaining so they will be **fun** to read; your ultimate purchase of the Bio-Rad products described in these articles will satisfy the **profitable** requirement; when we come to **useful** that needs discussion.

Our ideas on what is useful and your ideas on what is useful may differ somewhat, so before we produce too many issues let us see if we can establish some common ground. We feel that useful articles will fall into three categories: reports on new products and their uses, alterations and improvements to

existing products together with changes in performance and techniques and methods not previously reported. It is this last area where you can help.

Although this is a company publication and not a technical journal we know from long experience that many techniques and methods remain unpublished because they are not deemed to be of sufficient importance to command a full paper. We feel it will be useful to print communications from readers on techniques in column preparation, treatment of adsorbents, column packing, spotting, gel filtration, etc. If you feel this would help make Bio-Radiations useful drop a line to the editor. If you would like to share a particular technique with others send us a description. We'll print the communication subject to space requirements, prior receipt of similar material and the usual editor's reservation about editing to conserve space. Communications should be confined to 150 words if possible, except in those instances where you are taking exception to the editor. Since he probably won't select such articles for publication you can let yourself go. For security reasons—personal security—the name of the editor shall remain anonymous.



OUR MAN IN THE ANALYZER

Q-150 S - Resin in the Round

One of the difficulties in preparing resins for amino acid analyzers is getting the assurance that they will work properly under actual operating conditions. As an insurance policy we pre-test all Aminex resins in our analyzer. If they don't pass this, the strictest of all quality control tests, then they don't get the **Bio-Rad** label. This is also true of improved versions of standard analyzer resins—like Aminex MS, Blend Q-150 for example.

This is one of the workhorse analyzer resins, used in the long column in the standard Moore, Stein and Spackman method. Q-150 has always been a carefully sized granular material, but re-

cently we have developed a **SPHERICAL** version—a resin in the round—which has been named simply Q-150 S and is supplied at the same price as the old granular material—\$72.00/110 grams.

We recently started shipping Q-150 S against all orders for Q-150, but each bottle of the spherical material has attached to it a tag that explains the differences as outlined below. If you received the new Q-150 S and have completed a run we would like to have your comments.

Briefly, here is what you can expect from Q-150 S.

Particle Size:	More uniform than the granular material.
Packing:	Q-150 S is somewhat easier to pack and is less susceptible to attrition.
Back Pressure:	About the same as the granular material.
Resolution:	Better than the granular material.
Running Time:	Slightly longer than the granular material on standard size columns at usual pumping rate. For more rapid separations you can either use a slightly shorter column or increase the pumping rate a bit. Either method will give superior resolution at about the same running time as the old granular material.

IN THE NEXT ISSUE

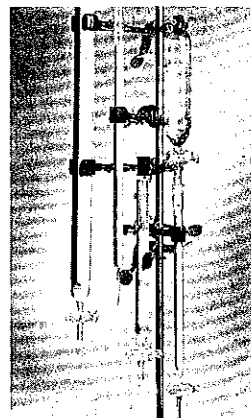
A new high speed resin at a sensible price. Complete analysis of protein hydrolysate in under 4 hours! Excellent separations! Back pressures low enough to eliminate the need for special modifications to your present equipment. Sensible price!

LOOKING FOR US IN PERSON

We will be at the American Chemical Society Meeting in Atlantic City, September 14-16, Booths 216-218, and at the Eastern Analytical Symposium in New York City, November 17-19, Booth Ivy B. There will be technical people in the booth at both meetings.

THE COLUMN COLUMN

In which we concern ourselves with new and improved adsorbents and techniques



HYDROXYLAPATITE

A New Companion for the Buffered Product

Some people find HYDROXYLAPATITE difficult to pronounce; almost everyone finds it difficult to make. Despite the problems we manufacture this form of calcium phosphate according to the method of Tiselius and have been supplying it as a wet material suspended in sodium phosphate buffer. You know this product as Bio-Gel HT.

Some of our customer friends made rather pointed remarks about the shipping and storage problems inherent in this physical form, so we developed our own unique process for drying hydroxylapatite. The proof of success came when we re-slurried dry material that had been stored

for some time. Voila! Hydroxylapatite with all the characteristics of the wet, buffered product.

This has been named BIO-GEL HTP, a dry, free-flowing powder that can be stored indefinitely in the dry state, yet when slurried and equilibrated with buffer is ready to use as a medium for proteins, enzymes, nucleic acids, viruses and other macromolecules. In a recent study financed by us the curves for the re-slurried dry material showed no significant differences from the curves for the buffered product. Neither one, unfortunately, will do a thing for a headache.

We offer Bio-Gel HTP at:	\$21.40/100 grams	98.00/500 grams
	(100 grams Bio-Gel HTP = 350 ml Bio-Gel HT)	
We still sell Bio-Gel HT:	\$16.50/250 ml	53.20/liter 216.00/5 liters

For more complete product description and bibliography see Price List Q, pages 38 and 39. If a colleague borrowed your copy drop us a line. We still have a few left in our reading room.

NAME CHANGE

Silicic acid for lipid chromatography, prepared by the method of Hirsch and Ahrens, has always been listed as just that. Now, however, there are two silicic acids for lipids and we have named them so:

BIO-SIL HA—silicic acid prepared by the method of Hirsch and Ahrens; finely ground (–325 mesh), carefully washed and dried in *vacuo*. Used for separating complex lipid mixtures.

BIO-SIL BH—silicic acid prepared by the method of Barron and Hanahan. Coarser (100-200 mesh) than above, washed differently but again dried in *vacuo*. Used for the separation of simple (neutral) lipids.

EASIER SPOTTING

When applying precise samples to a column, particularly to adsorbents that are easily disturbed, it is helpful to have a pipet that is extremely accurate, available in a wide variety of sizes and has a curved tip so the sample can be applied to the inside of the column rather than directly to the adsorbent. This combination of virtues is found in our **B & B Micropipets**. These are the Lang-Levy type with drawn out capillary tip curved as required above, constriction for automatic adjustment to the specified amount, and available in a wide variety of sizes from 1 to 3,000 microliters. Accuracy is better than 2%. If you would like a descriptive brochure on these pipets ask for BR-1.

Deuterium Gas in NO DEPOSIT – NO RETURN Cylinders

Bio-Rad manufactures a very high purity deuterium gas and has traditionally supplied this in returnable cylinders with the customer putting a deposit of twenty dollars on each cylinder. At some installations these cylinders piled up like soft drink bottles under the kitchen sink, and at twenty dollars a throw this ran into enough money to alert the people in accounting. Could we do something about it, please? We could and we did.

Now you can have our high purity deuterium gas in No Deposit—No Return cylinders at practically the same price as the old returnable type and with none of the problems. The gas comes in

three cylinder sizes—25, 50 and 100 liters—all at a pressure of 240 psi. The 25 liter cylinder is 9" long with a 4" diameter, the 50 liter cylinder 12 x 5". (Dimensions of the 100 liter cylinder were still undecided as this was written, so temporarily you may get two 50 liter cylinders for every 100 liters you order—at the 100 liter price, of course.)

So now we are always filling brand new cylinders and the accounting departments are happy; at least they have stopped calling us. Next we expect someone will ask for a pop-top cylinder.

Here are prices for the high purity deuterium gas:

Price per Cylinder in Quantities Shown

Cylinder Size	1	5	10	25
25 liters	\$27.00	26.00	25.00	23.00
50 liters	47.50	45.00	44.50	43.00
100 liters	87.00	85.00	84.00	82.00

Above prices are for disposable cylinders—no deposit, no cylinder return.
FOB Richmond, California or New York City—terms Net 30 days.

Minimum isotopic concentration 99.65 atom % D.
Oxygen content less than 1 ppm.
Nitrogen content less than 24 ppm.
Dew point — 100° F.
Oil free.

ORDERING INFORMATION

Bio-Rad products are supplied direct to the user from two locations:

Richmond, California
32 & Griffin Avenue
Telephone: 415 234-4130
Telex: 033-658

New York, N. Y. 10014
22 Jones Street
Telephone: 212 WA 4-4232
Telex: 01-26108

Bio-Rad products are also supplied from all Calbiochem offices.



BIO-RAD Laboratories
32 & GRIFFIN AVE.
RICHMOND, CALIF.

HERE IS YOUR FIRST ISSUE OF

BIO-RADIATIONS

A New Publication from Bio-Rad Laboratories—dealing mostly with chromatographic separations, the techniques and the products.

In This Issue

- "Our Man in the Analyzer" describes a new spherical resin.
- "The Column Column" discusses Hydroxylapatite.
- Deuterium Gas in Disposable Cylinders
- The Editor makes a pitch.
- New Peptide Desalter