

**4 510K Summary**

**Submitter:**

DEC 24 2008

Biocompatibles UK Ltd.  
Weydon Lane  
Chapman House  
Weydon Lane, Farnham, Surrey  
+44 1252732732

**Contact:**

Dr. Alistair Taylor

**510(k) Numbers and Product Codes of equivalent devices.**

BioCure, Inc,  
GelSpheres Microspheres  
510K Number: #K023089  
Product Code: HCG/KRD  
**CFR Section: 882.5950**

Biocompatibles UK Ltd.  
GelSpheres Microspheres  
Bead Block™ Compressible Microspheres  
510K Number: #K033761  
Product Code: HCG/KRD  
**CFR Section: 882.5950**

Biocompatibles UK Ltd.  
GelSpheres Microspheres  
Bead Block™ Compressible Microspheres  
510K Number: #K042231  
Product Code: HCG  
**CFR Section: 870.3300**

**Biocompatibles UK Ltd**

**Bead Block and LC Bead****Page 17 of 120****4.1 Indications for Use and Intended Population**

*“LC Bead/Bead Block™ Compressible Microspheres are indicated for Embolization of hypervascular tumors and arteriovenous malformations (AVM's).*

**4.1.1 Device Description**

LC Bead and Bead Block™ Compressible Microspheres are preformed soft, deformable microspheres that occlude arteries for the purpose of blocking the blood flow to a target tissue, such as a hypervascular tumor or arteriovenous malformations (AVM's). LC Bead and Bead Block™ Compressible Microspheres consist of a macromer derived from polyvinyl alcohol (PVA). The fully polymerized microsphere is approximately 90% water and is compressible to approximately 20-30% by diameter. Bead Block™ Compressible Microspheres is dyed blue (LC Bead are available in natural color) to aid in the visualization of the microspheres in the delivery syringe. The microspheres can be delivered through typical microcatheters in the 1.8-5Fr range.

LC Bead Microspheres is supplied sterile and packaged in sealed glass vials. Bead Block™ Compressible Microspheres is supplied sterile and packaged in a polycarbonate syringe. Two quantities will be available in a vial: (1) 1.0 mL LC Bead /Bead Block™ Compressible Microspheres in sterile physiologic buffered saline (PBS) to a volume of 8 mL, and (2) 2.0mL LC Bead/Bead Block™ Compressible Microspheres in sterile PBS to a volume of 8 mL.

LC Bead and Bead Block Compressible Microspheres are supplied in several unit sizes covering the range from 100µm to 1200µm diameter.

At the time of use, LC Bead/Bead Block™ Compressible Microspheres is mixed with a nonionic contrast agent, e.g. Omnipaque, to make a 30-50% by weight solution. The bolus of contrast agent elutes from the vascular bed to leave a radiolucent, embolized vessel.

**4.2 Similarities and Differences to Predicates**

The Intended Use of LC Bead /Bead Block™ Compressible Microspheres and the predicate device are the same and unchanged other than product names. This pre-

**Biocompatibles UK Ltd**

Questions? Contact FDA/CDRH/OCE/DID at CDRH-FOISTATUS@fda.hhs.gov or call 301-796-8118.

**Bead Block and LC Bead****Page 18 of 120**

market notification addresses Biocompatibles UK Ltd. intent to market LC Bead with the Vascular (KRD) Code and to update its registration and listing with this code.

Other than trade name there are no differences when comparing Biocompatibles, LC Bead/Bead Block™ to the predicate devices.

**4.3 Performance Standards**

LC Bead/Bead Block Compressible Microspheres meet the following Performance Standards:

- Guidance For Industry; 2004: FDA Guidance for Neurological Embolization Products
- ISO/EN 10993-1; 1997 Biological Evaluation of Medical Devices, Part 1: Evaluation and Testing
- ISO/EN 10993-3; 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.
- ISO/EN 10993-4; 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood.
- ISO/EN 10993-6; 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.
- ISO/EN 10993-10; 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.
- ISO/EN 10993-11; 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.
- ISO/EN 11607; 1997 – Packaging for terminally sterilized products.
- AAMI 11134; 1993 – Sterilization of Health Care Products – Requirements for validation and routine control – Industrial moist heat sterilization 2<sup>nd</sup> edition.
- ANSI/AAMI/ISO 14937; 2000 – Sterilization of Health Care Products – Characterization of a Sterilizing Agent and the Development, Validation and Routine Control of a Sterilization Process for Medical Devices.
- EN 554: Sterilization of Medical Devices – validation and Routine Control of Sterilization by Moist Heat

**Biocompatibles UK Ltd**



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration  
9200 Corporate Boulevard  
Rockville MD 20850

DEC 24 2008

Generic Devices Consulting, Inc.  
c/o Mr. John Greenbaum  
20310 SW 48<sup>th</sup> Street  
Ft. Lauderdale, FL 33332

Re: K083091

LC Bead Microspheres, Bead Block Compressible Microspheres  
Regulation Number: 21 CFR 870.3300  
Regulation Name: Vascular Embolization Device  
Regulatory Class: Class II  
Product Code: KRD  
Dated: October 11, 2008  
Received: October 17, 2008

Dear Mr. Greenbaum:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

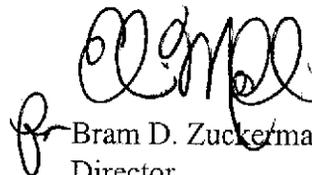
If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to such additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Page 2 - Mr. John Greenbaum

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050. This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Center for Devices and Radiological Health's (CDRH's) Office of Compliance at (240) 276-0120. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). For questions regarding postmarket surveillance, please contact CDRH's Office of Surveillance and Biometrics' (OSB's) Division of Postmarket Surveillance at 240-276-3474. For questions regarding the reporting of device adverse events (Medical Device Reporting (MDR)), please contact the Division of Surveillance Systems at 240-276-3464. You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (240) 276-3150 or at its Internet address <http://www.fda.gov/cdrh/industry/support/index.html>.

Sincerely yours,



Bram D. Zuckerman, M.D.

Director

Division of Cardiovascular Devices

Office of Device Evaluation

Center for Devices and

Radiological Health

Enclosure

**Bead Block and LC Bead**

510(k) Number(if known):   K083091  

Device Name:

**LC Bead Microspheres  
Bead Block™ Compressible Microspheres**

Indications For Use:

***"LC Bead Microspheres & Bead Block™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."***

**Prescription Use   X             OR           Over-The-Counter Use**  
(Per 21 CFR 801.109)

**PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED)**

Concurrence of CDRH, Office of Device Evaluation (ODE)

(Optional Format 1-2-96)

Certification Statement

**(Division Sign-Off)  
Division of Cardiovascular Devices**

**510(k) Number   K083091**

**Biocompatibles UK Ltd**



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration  
9200 Corporate Boulevard  
Rockville MD 20850

DEC 24 2008

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c/o Mr. John Greenbaum  
20310 SW 48<sup>th</sup> Street  
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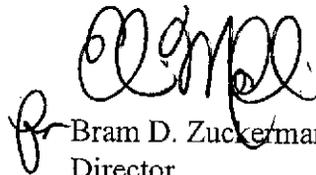
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Bram D. Zuckerman, M.D.

Director

Division of Cardiovascular Devices

Office of Device Evaluation

Center for Devices and

Radiological Health

Enclosure

**Bead Block and LC Bead**

510(k) Number(if known): K083091

Device Name:

**LC Bead Microspheres  
Bead Block™ Compressible Microspheres**

Indications For Use:

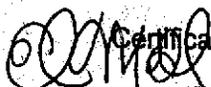
***"LC Bead Microspheres & Bead Block™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."***

Prescription Use X OR Over-The-Counter Use       
(Per 21 CFR 801.109)

PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of Device Evaluation (ODE)

(Optional Format 1-2-96)

  
Certification Statement  

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**(Division Sign-Off)**  
**Division of Cardiovascular Devices**  
510(k) Number K083091

**Biocompatibles UK Ltd**



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration  
9200 Corporate Boulevard  
Rockville, Maryland 20850

October 17, 2008

BIOCOMPATIBLES U.K. LIMITED  
C/O GENERIC DEVICES CONSULTING, INC.  
20310 SW 48TH STREET  
FT. LAUDERDALE, FLORIDA 33332  
UNITED STATES  
ATTN: JOHN GREENBAUM

510k Number: K083091

Received: 10/17/2008

Product: LC BEAD MICROSPHERES, BEAD BLO

The Food and Drug Administration (FDA), Center for Devices and Radiological Health (CDRH), has received the Premarket Notification, (510(k)), you submitted in accordance with Section 510(k) of the Federal Food, Drug, and Cosmetic Act (Act) for the above referenced product and for the above referenced 510(k) submitter. Please note, if the 510(k) submitter is incorrect, please notify the 510(k) Staff immediately. We have assigned your submission a unique 510(k) number that is cited above. Please refer prominently to this 510(k) number in all future correspondence that relates to this submission. We will notify you when the processing of your 510(k) has been completed or if any additional information is required. **YOU MAY NOT PLACE THIS DEVICE INTO COMMERCIAL DISTRIBUTION UNTIL YOU RECEIVE A LETTER FROM FDA ALLOWING YOU TO DO SO.**

Please remember that all correspondence concerning your submission **MUST** be sent to the Document Mail Center (DMC)(HFZ-401) at the above letterhead address. Correspondence sent to any address other than the one above will not be considered as part of your official 510(k) submission.

On September 27, 2007, the President signed an act reauthorizing medical device user fees for fiscal years 2008 - 2012. The legislation - the Medical Device User Fee Amendments of 2007 is part of a larger bill, the Food and Drug Amendments Act of 2007. Please visit our website at <http://www.fda.gov/cdrh/mdufma/index.html> for more information regarding fees and FDA review goals. In addition, effective January 2, 2008, any firm that chooses to use a standard in the review of ANY new 510(k) needs to fill out the new standards form (Form 3654) and submit it with their 510(k). The form may be found at <http://www.fda.gov/opacom/morechoices/fdaforms/FDA-3654.pdf>.

We remind you that Title VIII of the Food and Drug Administration Amendments Act of 2007 (FDAAA) amended the PHS Act by adding new section 402(j) (42 U.S.C. § 282(j)), which expanded the current database known as [ClinicalTrials.gov](http://www.clinicaltrials.gov) to include mandatory registration and reporting of results for applicable clinical trials of human drugs (including biological products) and devices. Section 402(j) requires that a certification form (<http://www.fda.gov/opacom/morechoices/fdaforms/FDA-3674.pdf>) accompany 510(k)/HDE/PMA submissions. The agency has issued a draft guidance titled: "Certifications To Accompany Drug, Biological

Product, and Device Applications/Submissions: Compliance with Section 402(j) of The Public Health Service Act, Added By Title VIII of The Food and Drug Administration Amendments Act of 2007”

([http://www.fda.gov/oc/initiatives/fdaaa/guidance\\_certifications.html](http://www.fda.gov/oc/initiatives/fdaaa/guidance_certifications.html)). According to the draft guidance, 510(k) submissions that do not contain clinical data do not need the certification form.

Please note the following documents as they relate to 510(k) review: 1) Guidance for Industry and FDA Staff entitled, “Interactive Review for Medical Device Submissions: 510(k)s, Original PMAs, PMA Supplements, Original BLAs and BLA Supplements”. This guidance can be found at <http://www.fda.gov/cdrh/ode/guidance/1655.pdf>. Please refer to this guidance for information on a formalized interactive review process. 2) Guidance for Industry and FDA Staff entitled, "Format for Traditional and Abbreviated 510(k)s". This guidance can be found at [www.fda.gov/cdrh/ode/guidance/1567.html](http://www.fda.gov/cdrh/ode/guidance/1567.html). Please refer to this guidance for assistance on how to format an original submission for a Traditional or Abbreviated 510(k).

In all future premarket submissions, we encourage you to provide an electronic copy of your submission. By doing so, you will save FDA resources and may help reviewers navigate through longer documents more easily. Under CDRH's e-Copy Program, you may replace one paper copy of any premarket submission (e.g., 510(k), IDE, PMA, HDE) with an electronic copy. For more information about the program, including the formatting requirements, please visit our web site at [www.fda.gov/cdrh/elecsb.html](http://www.fda.gov/cdrh/elecsb.html).

Lastly, you should be familiar with the regulatory requirements for medical devices available at Device Advice [www.fda.gov/cdrh/devadvice/](http://www.fda.gov/cdrh/devadvice/)". If you have questions on the status of your submission, please contact DSMICA at (240) 276-3150 or the toll-free number (800) 638-2041, or at their Internet address <http://www.fda.gov/cdrh/dsma/dsmastaf.html>. If you have procedural questions, please contact the 510(k) Staff at (240)276-4040.

Sincerely yours,

Marjorie Shulman  
Supervisory Consumer Safety Officer  
Premarket Notification Section  
Office of Device Evaluation  
Center for Devices and Radiological Health

NE / DCRND

K083091

**John Greenbaum**  
**Generic Devices Consulting**

20310 SW 48<sup>th</sup> Street  
Ft. Lauderdale, FL. 33332

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Fax (954) 680-0161  
Home Phone (954) 680-2548  
Mobile (954) 610-0178  
Email genericd@bellsouth.net

October 16, 2008

Office of Device Evaluation  
Document Mail Center (HFZ-401)  
Center for Devices and Radiological Health  
Food and Drug Administration  
9200 Corporate Blvd.  
Rockville, Maryland 20850

FDA CDRH DMC

OCT 17 2008

RE: 510K Pre-market notification for LC Bead/Beadblock

Received

K-15

Dear Sir/Madam,

This letter certifies that the E-copies provided with this 510k pre-market notification are identical to the original (with the exception that divider tabs are not present in the e-copies).

Sincerely,



John Greenbaum  
Generic Devices Consulting, Inc.

**John Greenbaum**  
**Generic Devices Consulting**

20310 SW 48<sup>th</sup> Street  
Ft. Lauderdale, FL. 33332

---

Fax (954) 680-0161  
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October 16, 2008

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20310 SW 48<sup>th</sup> Street  
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Fax (954) 680-0161  
Phone (954) 680-2548  
Mobile (954) 610-0161  
Email: genericd@bellsouth.net

October 11, 2008

Office of Device Evaluation  
Document Mail Center (HFZ-401)  
Center for Devices and Radiological Health  
Food and Drug Administration  
9200 Corporate Blvd.  
Rockville, Maryland 20850

Dear Sir/Madam,

Please find enclosed, a Pre-market Notification for LC Bead/Bead Block™ Compressible Microspheres in Behalf of Biocompatibles UK Ltd.

Biocompatibles is the primary manufacturer and distributor for LC Bead/Bead Block™ Compressible Microspheres, also manufactured by BioCure, Inc.

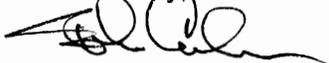
In this Pre-market Notification, Biocompatibles UK Ltd. Intends to market the device for both Neurovascular and vascular applications. There is no change to the device, or indications for use. The original 510K (K042231) was intended for both HCG and KRD codes (as was the identical predicate made by BioCure, Inc in K023089), however, the 510K was cleared with only the HCG code in the SE letter. ***This file is for review in DCD/PVDB.*** The 510K provided herein is nearly identical to the one filed under K042231. It does reflect any changes to the device (labeling - name change). No other 510K reportable changes have been made to the device or its manufacturing since K042231.

Previously we had requested that FDA issue a letter of correction to the SE letter for K042231. FDA responded that a resubmission of the 510K requesting the additional Code be added. We are now conforming to that request with this pre-market notification.

Generic Devices Consulting (John Greenbaum) is the U.S. Foreign Agent for Biocompatibles UK. Ltd. and is the official correspondent for this pre-market notification. Biocompatibles has a payment account established and a check for the filing fee for this pre-market notification has been sent concurrently with the filing.

Please do not hesitate to call if you have any questions or need additional information.

Sincerely,



John Greenbaum

Form Approved OMB No. 0910-011 Expiration Date January 31, 2010 See Instructions for OMB Statement

DEPARTMENT OF HEALTH AND HUMAN SERVICES FOOD AND DRUG ADMINISTRATION <b>MEDICAL DEVICE USER FEE COVER SHEET</b>		PAYMENT IDENTIFICATION NUMBER: (b)(4) Write the Payment Identification number on your check.				
A completed cover sheet must accompany each original application or supplement subject to fees. If payment is sent by U.S. mail or courier, please include a copy of this completed form with payment. Payment and mailing instructions can be found at: <a href="http://www.fda.gov/oc/mdufma/cover sheet.html">http://www.fda.gov/oc/mdufma/cover sheet.html</a>						
1. COMPANY NAME AND ADDRESS (include name, street address, city state, country, and post office code)  BIOCOMPATIBLES UK LTD 20310 SW 48th Street Southwest Ranches FL 33332 US  1.1 EMPLOYER IDENTIFICATION NUMBER (EIN) NO DATA	2. CONTACT NAME John Greenbaum  2.1 E-MAIL ADDRESS genericd@bellsouth.net  2.2 TELEPHONE NUMBER (include Area code) 954-680-2548  2.3 FACSIMILE (FAX) NUMBER (Include Area code) null-954-680-0161					
3. TYPE OF PREMARKET APPLICATION (Select one of the following in each column; if you are unsure, please refer to the application descriptions at the following web site: <a href="http://www.fda.gov/dc/mdufma">http://www.fda.gov/dc/mdufma</a> )  <table border="0"> <tr> <td style="vertical-align: top;"> <u>Select an application type:</u>  <input checked="" type="checkbox"/> Premarket notification(510(k)); except for third party  <input type="checkbox"/> 513(g) Request for Information  <input type="checkbox"/> Biologics License Application (BLA)  <input type="checkbox"/> Premarket Approval Application (PMA)  <input type="checkbox"/> Modular PMA  <input type="checkbox"/> Product Development Protocol (PDP)  <input type="checkbox"/> Premarket Report (PMR)  <input type="checkbox"/> Annual Fee for Periodic Reporting (APR)  <input type="checkbox"/> 30-Day Notice                     </td> <td style="vertical-align: top;"> <u>3.1 Select one of the types below</u>  <input checked="" type="checkbox"/> Original Application  <u>Supplement Types:</u>  <input type="checkbox"/> Efficacy (BLA)  <input type="checkbox"/> Panel Track (PMA, PMR, PDP)  <input type="checkbox"/> Real-Time (PMA, PMR, PDP)  <input type="checkbox"/> 180-day (PMA, PMR, PDP)                     </td> </tr> </table>			<u>Select an application type:</u> <input checked="" type="checkbox"/> Premarket notification(510(k)); except for third party <input type="checkbox"/> 513(g) Request for Information <input type="checkbox"/> Biologics License Application (BLA) <input type="checkbox"/> Premarket Approval Application (PMA) <input type="checkbox"/> Modular PMA <input type="checkbox"/> Product Development Protocol (PDP) <input type="checkbox"/> Premarket Report (PMR) <input type="checkbox"/> Annual Fee for Periodic Reporting (APR) <input type="checkbox"/> 30-Day Notice	<u>3.1 Select one of the types below</u> <input checked="" type="checkbox"/> Original Application <u>Supplement Types:</u> <input type="checkbox"/> Efficacy (BLA) <input type="checkbox"/> Panel Track (PMA, PMR, PDP) <input type="checkbox"/> Real-Time (PMA, PMR, PDP) <input type="checkbox"/> 180-day (PMA, PMR, PDP)		
<u>Select an application type:</u> <input checked="" type="checkbox"/> Premarket notification(510(k)); except for third party <input type="checkbox"/> 513(g) Request for Information <input type="checkbox"/> Biologics License Application (BLA) <input type="checkbox"/> Premarket Approval Application (PMA) <input type="checkbox"/> Modular PMA <input type="checkbox"/> Product Development Protocol (PDP) <input type="checkbox"/> Premarket Report (PMR) <input type="checkbox"/> Annual Fee for Periodic Reporting (APR) <input type="checkbox"/> 30-Day Notice	<u>3.1 Select one of the types below</u> <input checked="" type="checkbox"/> Original Application <u>Supplement Types:</u> <input type="checkbox"/> Efficacy (BLA) <input type="checkbox"/> Panel Track (PMA, PMR, PDP) <input type="checkbox"/> Real-Time (PMA, PMR, PDP) <input type="checkbox"/> 180-day (PMA, PMR, PDP)					
4. ARE YOU A SMALL BUSINESS? (See the instructions for more information on determining this status) <input type="checkbox"/> YES, I meet the small business criteria and have submitted the required qualifying documents to FDA <input checked="" type="checkbox"/> NO, I am not a small business 4.1 If Yes, please enter your Small Business Decision Number:						
5. IS THIS PREMARKET APPLICATION COVERED BY ANY OF THE FOLLOWING USER FEE EXCEPTIONS? IF SO, CHECK THE APPLICABLE EXCEPTION. <table border="0"> <tr> <td><input type="checkbox"/> This application is the first PMA submitted by a qualified small business, including any affiliates, parents, and partner firms</td> <td><input type="checkbox"/> The sole purpose of the application is to support conditions of use for a pediatric population</td> </tr> <tr> <td><input type="checkbox"/> This biologics application is submitted under section 351 of the Public Health Service Act for a product licensed for further manufacturing use only</td> <td><input type="checkbox"/> The application is submitted by a state or federal government entity for a device that is not to be distributed commercially</td> </tr> </table>			<input type="checkbox"/> This application is the first PMA submitted by a qualified small business, including any affiliates, parents, and partner firms	<input type="checkbox"/> The sole purpose of the application is to support conditions of use for a pediatric population	<input type="checkbox"/> This biologics application is submitted under section 351 of the Public Health Service Act for a product licensed for further manufacturing use only	<input type="checkbox"/> The application is submitted by a state or federal government entity for a device that is not to be distributed commercially
<input type="checkbox"/> This application is the first PMA submitted by a qualified small business, including any affiliates, parents, and partner firms	<input type="checkbox"/> The sole purpose of the application is to support conditions of use for a pediatric population					
<input type="checkbox"/> This biologics application is submitted under section 351 of the Public Health Service Act for a product licensed for further manufacturing use only	<input type="checkbox"/> The application is submitted by a state or federal government entity for a device that is not to be distributed commercially					
6. IS THIS A SUPPLEMENT TO A PREMARKET APPLICATION FOR WHICH FEES WERE WAIVED DUE TO SOLE USE IN A PEDIATRIC POPULATION THAT NOW PROPOSES CONDITION OF USE FOR ANY ADULT POPULATION? (if so, the application is subject to the fee that applies for an original premarket approval application (PMA).)  <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO						
7. USER FEE PAYMENT AMOUNT SUBMITTED FOR THIS PREMARKET APPLICATION (b)(4)		09-Oct-2008				

Form FDA-304 (07/2009)

*1012108*

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Form Approved OMB No. 0910-511 Expiration Date: January 31, 2010. See Instructions for OMB Statement.

DEPARTMENT OF HEALTH AND HUMAN SERVICES FOOD AND DRUG ADMINISTRATION <b>MEDICAL DEVICE USER FEE COVER SHEET</b>		PAYMENT IDENTIFICATION NUMBER: (b)(4) Write the Payment identification number on your check.				
A completed cover sheet must accompany each original application or supplement subject to fees. If payment is sent by U.S. mail or courier, please include a copy of this completed form with payment. Payment and mailing instructions can be found at: <a href="http://www.fda.gov/oc/mdufma/cover-sheet.html">http://www.fda.gov/oc/mdufma/cover-sheet.html</a>						
1. COMPANY NAME AND ADDRESS (include name, street address, city state, country, and post office code)  BIOCMPATIBLES UK LTD 20310 SW 48th Street Southwest Ranches FL 33332 US 1.1 EMPLOYER IDENTIFICATION NUMBER (EIN) NO DATA	2. CONTACT NAME John Greenbaum 2.1 E-MAIL ADDRESS genericd@bellsouth.net 2.2 TELEPHONE NUMBER (include Area code) 954-680-2548 2.3 FACSIMILE (FAX) NUMBER (Include Area code) null-954-680-0161					
3. TYPE OF PREMARKET APPLICATION (Select one of the following in each column; if you are unsure, please refer to the application descriptions at the following web site: <a href="http://www.fda.gov/dc/mdufma">http://www.fda.gov/dc/mdufma</a> )  <table border="0"> <tr> <td style="vertical-align: top;"> <u>Select an application type:</u>  <input checked="" type="checkbox"/> Premarket notification(510(k)); except for third party  <input type="checkbox"/> 513(g) Request for Information  <input type="checkbox"/> Biologics License Application (BLA)  <input type="checkbox"/> Premarket Approval Application (PMA)  <input type="checkbox"/> Modular PMA  <input type="checkbox"/> Product Development Protocol (PDP)  <input type="checkbox"/> Premarket Report (PMR)  <input type="checkbox"/> Annual Fee for Periodic Reporting (APR)  <input type="checkbox"/> 30-Day Notice                     </td> <td style="vertical-align: top;"> <u>3.1 Select one of the types below</u>  <input checked="" type="checkbox"/> Original Application  <u>Supplement Types:</u>  <input type="checkbox"/> Efficacy (BLA)  <input type="checkbox"/> Panel Track (PMA, PMR, PDP)  <input type="checkbox"/> Real-Time (PMA, PMR, PDP)  <input type="checkbox"/> 180-day (PMA, PMR, PDP)                     </td> </tr> </table>			<u>Select an application type:</u> <input checked="" type="checkbox"/> Premarket notification(510(k)); except for third party <input type="checkbox"/> 513(g) Request for Information <input type="checkbox"/> Biologics License Application (BLA) <input type="checkbox"/> Premarket Approval Application (PMA) <input type="checkbox"/> Modular PMA <input type="checkbox"/> Product Development Protocol (PDP) <input type="checkbox"/> Premarket Report (PMR) <input type="checkbox"/> Annual Fee for Periodic Reporting (APR) <input type="checkbox"/> 30-Day Notice	<u>3.1 Select one of the types below</u> <input checked="" type="checkbox"/> Original Application <u>Supplement Types:</u> <input type="checkbox"/> Efficacy (BLA) <input type="checkbox"/> Panel Track (PMA, PMR, PDP) <input type="checkbox"/> Real-Time (PMA, PMR, PDP) <input type="checkbox"/> 180-day (PMA, PMR, PDP)		
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4. ARE YOU A SMALL BUSINESS? (See the instructions for more information on determining this status) <input type="checkbox"/> YES, I meet the small business criteria and have submitted the required qualifying documents to FDA <input checked="" type="checkbox"/> NO, I am not a small business 4.1 If Yes, please enter your Small Business Decision Number:						
5. IS THIS PREMARKET APPLICATION COVERED BY ANY OF THE FOLLOWING USER FEE EXCEPTIONS? IF SO, CHECK THE APPLICABLE EXCEPTION. <table border="0"> <tr> <td><input type="checkbox"/> This application is the first PMA submitted by a qualified small business, including any affiliates, parents, and partner firms</td> <td><input type="checkbox"/> The sole purpose of the application is to support conditions of use for a pediatric population</td> </tr> <tr> <td><input type="checkbox"/> This biologics application is submitted under section 351 of the Public Health Service Act for a product licensed for further manufacturing use only</td> <td><input type="checkbox"/> The application is submitted by a state or federal government entity for a device that is not to be distributed commercially</td> </tr> </table>			<input type="checkbox"/> This application is the first PMA submitted by a qualified small business, including any affiliates, parents, and partner firms	<input type="checkbox"/> The sole purpose of the application is to support conditions of use for a pediatric population	<input type="checkbox"/> This biologics application is submitted under section 351 of the Public Health Service Act for a product licensed for further manufacturing use only	<input type="checkbox"/> The application is submitted by a state or federal government entity for a device that is not to be distributed commercially
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7. USER FEE PAYMENT AMOUNT SUBMITTED FOR THIS PREMARKET APPLICATION (b)(4) <i>10/12/08</i>		09-Oct-2008				

Form FDA 3601 (04-07)

"Close Window." Print Cover sheet

**John Greenbaum**  
**Generic Devices Consulting, Inc.**

20310 SW 48<sup>th</sup> Street  
Ft. Lauderdale, FL. 33332  
Fax (954) 680-0161  
Phone (954) 680-2548  
Mobile (954) 610-0161  
Email: genericd@bellsouth.net

October 11, 2008

Office of Device Evaluation  
Document Mail Center (HFZ-401)  
Center for Devices and Radiological Health  
Food and Drug Administration  
9200 Corporate Blvd.  
Rockville, Maryland 20850

Dear Sir/Madam,

Please find enclosed, a Pre-market Notification for LC Bead/Bead Block™ Compressible Microspheres in Behalf of Biocompatibles UK Ltd.

Biocompatibles is the primary manufacturer and distributor for LC Bead/Bead Block™ Compressible Microspheres, also manufactured by BioCure, Inc.

In this Pre-market Notification, Biocompatibles UK Ltd. Intends to market the device for both Neurovascular and vascular applications. There is no change to the device, or indications for use. The original 510K (K042231) was intended for both HCG and KRD codes (as was the identical predicate made by BioCure, Inc in K023089), however, the 510K was cleared with only the HCG code in the SE letter. ***This file is for review in DCD/PVDB.*** The 510K provided herein is nearly identical to the one filed under K042231. It does reflect any changes to the device (labeling - name change). No other 510K reportable changes have been made to the device or its manufacturing since K042231.

Previously we had requested that FDA issue a letter of correction to the SE letter for K042231. FDA responded that a resubmission of the 510K requesting the additional Code be added. We are now conforming to that request with this pre-market notification.

Generic Devices Consulting (John Greenbaum) is the U.S. Foreign Agent for Biocompatibles UK. Ltd. and is the official correspondent for this pre-market notification. Biocompatibles has a payment account established and a check for the filing fee for this pre-market notification has been sent concurrently with the filing.

Please do not hesitate to call if you have any questions or need additional information.

Sincerely,

John Greenbaum

Form Approved: OMB No. 0910-511 Expiration Date: January 31, 2010. See Instructions for OMB Statement.

DEPARTMENT OF HEALTH AND HUMAN SERVICES FOOD AND DRUG ADMINISTRATION <b>MEDICAL DEVICE USER FEE COVER SHEET</b>		PAYMENT IDENTIFICATION NUMBER: (b)(4) Write the Payment Identification number on your check.
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1. COMPANY NAME AND ADDRESS (include name, street address, city state, country, and post office code)  BIOCOMPATIBLES UK LTD 20310 SW 48th Street Southwest Ranches FL 33332 US 1.1 EMPLOYER IDENTIFICATION NUMBER (EIN) NO DATA	2. CONTACT NAME John Greenbaum 2.1 E-MAIL ADDRESS generic@bellsouth.net 2.2 TELEPHONE NUMBER (include Area code) 954-680-2548 2.3 FACSIMILE (FAX) NUMBER (Include Area code) null-954-680-0161	
3. TYPE OF PREMARKET APPLICATION (Select one of the following in each column; if you are unsure, please refer to the application descriptions at the following web site: <a href="http://www.fda.gov/dc/mdufma">http://www.fda.gov/dc/mdufma</a> )  Select an application type: <input checked="" type="checkbox"/> Premarket notification(510(k)); except for third party <input type="checkbox"/> 513(g) Request for Information <input type="checkbox"/> Biologics License Application (BLA) <input type="checkbox"/> Premarket Approval Application (PMA) <input type="checkbox"/> Modular PMA <input type="checkbox"/> Product Development Protocol (PDP) <input type="checkbox"/> Premarket Report (PMR) <input type="checkbox"/> Annual Fee for Periodic Reporting (APR) <input type="checkbox"/> 30-Day Notice		
3.1 Select one of the types below <input checked="" type="checkbox"/> Original Application Supplement Types: <input type="checkbox"/> Efficacy (BLA) <input type="checkbox"/> Panel Track (PMA, PMR, PDP) <input type="checkbox"/> Real-Time (PMA, PMR, PDP) <input type="checkbox"/> 180-day (PMA, PMR, PDP)		
4. ARE YOU A SMALL BUSINESS? (See the instructions for more information on determining this status) <input type="checkbox"/> YES, I meet the small business criteria and have submitted the required qualifying documents to FDA <input checked="" type="checkbox"/> NO, I am not a small business 4.1 If Yes, please enter your Small Business Decision Number:		
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7. USER FEE PAYMENT AMOUNT SUBMITTED FOR THIS PREMARKET APPLICATION (b)(4)		09-Oct-2008

Form FDA 3601 (01/2007)

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# 1 FDA Pre-Market Cover Sheet

CENTER FOR DEVICES AND RADIOLOGICAL HEALTH Premarket Submission Cover Sheet				
Date of Submission: <b>10/11/2008</b>		FDA Document Number:		
Section A Type of Submission				
<b>PMA</b> <input type="checkbox"/> Original Submission <input type="checkbox"/> Modular Submission <input type="checkbox"/> Amendment <input type="checkbox"/> Report <input type="checkbox"/> Report Amendment	<b>PMA Supplement</b> <input type="checkbox"/> Regular <input type="checkbox"/> Special <input type="checkbox"/> Panel Track <input type="checkbox"/> 30-day Supplement <input type="checkbox"/> 30-day Notice <input type="checkbox"/> 135-day Supplement <input type="checkbox"/> Real-time Review <input type="checkbox"/> Amendment to PMA Supplement	<b>PDP</b> <input type="checkbox"/> Presubmission <input type="checkbox"/> Original PDP <input type="checkbox"/> Notice of intent to start clinical trials <input type="checkbox"/> Intention to submit Notice of Completion <input type="checkbox"/> Notice of Completion <input type="checkbox"/> Amendment to PDP <input type="checkbox"/> Report	<b>510(k)</b> <input type="checkbox"/> Original Submission: <input type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated <input type="checkbox"/> Additional information: <input type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated	<b>Meeting</b> <input type="checkbox"/> Pre-IDE meeting <input type="checkbox"/> Pre-PMA meeting <input type="checkbox"/> Pre-PDP meeting <input type="checkbox"/> 180-day meeting <input type="checkbox"/> Other (specify):
<b>IDE</b> <input type="checkbox"/> Original Submission <input type="checkbox"/> Amendment <input type="checkbox"/> Supplement	<b>Humanitarian Device Exemption</b> <input type="checkbox"/> Original Submission <input type="checkbox"/> Amendment <input type="checkbox"/> Supplement <input type="checkbox"/> Report	<b>Class II Exemption</b> <input type="checkbox"/> Original Submission <input type="checkbox"/> Additional information	<b>Evaluation of Automatic Class III Designation</b> <input type="checkbox"/> Original Submission <input type="checkbox"/> Additional information	<b>Other Submission</b> <input type="checkbox"/> Describe Submission:
Section B Applicant or Sponsor				
Company/Institution Name: <b>Biocompatibles UK Ltd.</b>		Establishment Registration Number: <b>3002124545</b>		
Division Name (if applicable):		Phone Number (include area code): <b>+44 (0) 1252 732732</b>		
Street Address: <b>Chapman House, Farnham Business Park , Weydon Lane</b>		FAX Number (include area code): <b>+44 (0) 1252 732888</b>		
City: <b>Farnham</b>	State/Province: <b>Surrey GU9 8QL, U.K.</b>	Country: <b>England, United Kingdom</b>		
Contact Name: <b>Dr. Alistair Taylor</b>				
Contact Title: <b>Director of Regulatory Affairs</b>		Contact e-mail address: <b>alistair.taylor@biocompatibles.com</b>		
Section C Submission Correspondent (if different from above)				
Company/Institution Name: <b>Generic Devices Consulting, Inc.</b>		Establishment Registration Number: <b>N/A</b>		
Division Name (if applicable):		Phone Number (include area code): <b>954-680-2548 or 954-610-0178</b>		
Street Address: <b>20310 SW 48<sup>th</sup> Street</b>		FAX Number (include area code): <b>954-680-0161</b>		
City: <b>Ft. Lauderdale</b>	State/Province: <b>Florida 33332</b>	Country: <b>USA</b>		
Contact Name: <b>John Greenbaum</b>				
Contact Title: <b>Consultant</b>		Contact e-mail address: <b>genericcd@bellsouth.net</b>		

Section D1 Reason for Submission – PMA, PDP, or HDE		
<input type="checkbox"/> New Device <input type="checkbox"/> Withdrawal <input type="checkbox"/> Additional or expanded indications <input type="checkbox"/> Licensing Agreement  <input type="checkbox"/> Process Change <input type="checkbox"/> Manufacturing <input type="checkbox"/> Sterilization <input type="checkbox"/> Packaging <input type="checkbox"/> Other (specify below)  <input type="checkbox"/> Response to FDA Correspondence: <input type="checkbox"/> Request for applicant hold <input type="checkbox"/> Request for removal of applicant hold <input type="checkbox"/> Request for extension <input type="checkbox"/> Request to remove or add manufacturing site  <input type="checkbox"/> Other reason (specify):	<input type="checkbox"/> Change in design, component, or specification: <input type="checkbox"/> Software <input type="checkbox"/> Color Additive <input type="checkbox"/> Material <input type="checkbox"/> Specification <input type="checkbox"/> Other (specify below)  <input type="checkbox"/> Labeling Change: <input type="checkbox"/> Indications <input type="checkbox"/> Instructions <input type="checkbox"/> Performance Characteristics <input type="checkbox"/> Shelf Life <input type="checkbox"/> Trade Name <input type="checkbox"/> Other (specify below)	<input type="checkbox"/> Location Change: <input type="checkbox"/> Manufacturer <input type="checkbox"/> Sterilizer <input type="checkbox"/> Packager <input type="checkbox"/> Distributor  <input type="checkbox"/> Report Submission: <input type="checkbox"/> Annual or periodic <input type="checkbox"/> Post-approval Study <input type="checkbox"/> Adverse Reaction <input type="checkbox"/> Device Defect <input type="checkbox"/> Amendment  <input type="checkbox"/> Change in ownership <input type="checkbox"/> Change in correspondent

Section D2 Reason for Submission – IDE		
<input type="checkbox"/> New Device Addition of institution Expansion/extension of study IRB Certification Request hearing Request waiver Termination of Study Withdrawal of application Unanticipated adverse effect Notification of Emergency Use Compassionate use request Treatment IDE Continuing availability request  Other reason (specify):	<input type="checkbox"/> Change in: Correspondent Design Informed consent Manufacturer Manufacturing process Protocol – feasibility Protocol – Other Sponsor  <input type="checkbox"/> Report Submission: Current investigator Annual Progress Site waiver limit reached Final	<input type="checkbox"/> Response to FDA letter concerning: Conditional approval Deemed approved Deficient final report Deficient progress report Deficient investigator report Disapproval Request extension of time to respond to FDA Request meeting

Section D3 Reason for Submission – 510(k)		
<input type="checkbox"/> New Device <input type="checkbox"/> Additional or expanded indications <input checked="" type="checkbox"/> Other (specify): <b>Additional code KRD; indications for use unchanged</b>	<input type="checkbox"/> Change in Technology <input type="checkbox"/> Change in Design	<input type="checkbox"/> Change in Materials <input type="checkbox"/> Change in Manufacturing process

Section E Additional Information on 510(k) Submissions											
Product codes of devices to which substantial equivalence is claimed:										Summary of, or statement concerning, safety and effectiveness date:	
1	<b>KRD</b>	2		3		4		5		6	510(k) summary attached
7		8		9		10		11		12	510(k) statement
Information on devices to which substantial equivalence is claimed:											
510(k) Number				Trade or proprietary or model name				Manufacturer			
1	<b>K023089</b>			1	<b>GelSpheres Embolic Agent</b>			1	<b>BioCure, Inc.</b>		
2	<b>K033761</b>			2	<b>GelSpheres / Bead Block™ Compressible Microspheres</b>			2	<b>Biocompatibles UK Ltd.</b>		
3	<b>K042231</b>			3	<b>GelSpheres / Bead Block™ Compressible Microspheres</b>			3	<b>Biocompatibles UK Ltd.</b>		
4				4				4			
5				5				5			
6				6				6			

Section F Product Information – Applicable to All Applications					
Common or usual name or classification name: <b>Artificial Embolization Device</b>					
Trade or proprietary or model name			Model Number		
1	<b>LC Bead Microspheres</b>		1	<b>Various</b>	
2	<b>Bead Block™ Compressible Microspheres</b>		2	<b>Various</b>	
FDA document numbers of all prior related submissions (regardless of outcome):					
1	2	3	4	5	6
<b>K023089</b>	<b>K033761</b>				
Data included in submission:		Laboratory Testing	Animal Trials	Human Trials	
Section G Product Classification – Applicable to All Applications					
Product Code: <b>KRD</b>		C.F.R. Section: <b>870.3300</b>		Device Class: Class I <input type="checkbox"/> <b>Class II</b> Class III <input type="checkbox"/> Unclassified	
Classification Panel: <b>Neurological</b>					
Indications (from labeling): <b>LC Bead and Bead Block™ Compressible Microspheres ( Artificial Embolization Agent) are indicated for Embolization of hypervascular tumors and arteriovenous malformations (AVM's).</b>					
Note: Submission of this information does not affect the need to submit a 2891 or 2891a Device Establishment Registration form.			FDA Document Number:		
Section H Manufacturing / Packaging / Sterilization Sites					
Original <input type="checkbox"/> Add <input type="checkbox"/> Delete		FDA establishment registration number: <b>3002124545</b>		<input checked="" type="checkbox"/> Manufacturer <input type="checkbox"/> Contract Sterilizer <input type="checkbox"/> Contract Manufacturer <input type="checkbox"/> Repackager/Relabeler	
Company / Institution Name: <b>Biocompatibles UK Ltd.</b>			Establishment Registration Number: <b>3002124545</b>		
Division Name (if applicable):			Phone Number (include area code): <b>+44 (0) 1252 732732</b>		
Street Address: <b>Chapman House, Farnham Business Park, Weydon Lane.</b>			FAX Number (include area code): <b>+44 (0) 1252 732888</b>		
City: <b>Farnham</b>		State/Province: <b>Surrey</b>		Country: <b>England</b>	
Zip/Postal Code: <b>Surrey GU9 8QL</b>					
Contact Name: <b>Dr. Alistair Taylor</b>					
Contact Title: <b>Director, Regulatory affairs</b>			Contact e-mail address: <b>alistair.taylor@biocompatibles.com</b>		
Original <input type="checkbox"/> Add <input type="checkbox"/>		FDA establishment registration number: <b>3002807107</b>		<input type="checkbox"/> Manufacturer <input checked="" type="checkbox"/> Contract Sterilizer <input type="checkbox"/> Contract Manufacturer <input type="checkbox"/> Repackager/Relabeler	

(b)(4)

## 2 General Information

### 2.1 General Information

Biocompatibles UK Ltd. manufactures both the LC Bead Microspheres and Bead Block™ Compressible Microspheres (artificial Embolization Agent) which are also manufactured by BioCure, Inc. LC Bead & Bead Block are calibrated microspheres intended for the embolization of hypervascular tumors and arteriovenous malformations. LC Bead and Bead Block™ require use by a qualified clinician (interventional radiologist) who has the appropriate training and expertise to use embolic products.

In December 2002, BioCure Inc. of Atlanta, Georgia, USA, received clearance to market a product called “GelSpheres Embolic Agent” for the embolization of hypervascularized tumors and arterio-venous malformations. This approval covered two formulations of the GelSpheres which BioCure termed 7-1 and 7-11.

In September 2003, Biocompatibles UK Ltd. acquired from BioCure, Inc., the rights to market, distribute and manufacture both 7-1 and 7-11 formulations of the GelSpheres Embolic Agent. At this point Biocompatibles UK Ltd renamed the 7-1 formulation as “Bead Block” and commenced to market the product as a re-packer of the BioCure product in both the US and EU. The 7-11 formulation was not renamed and remained as GelSpheres at this time.

Biocompatibles UK Ltd was approved as manufacturer of both formulations in 2004 in the US and EU. Both Bead Block and GelSpheres remained as the formulation names.

In 2005 in the US, the 7-11 GelSpheres product was renamed as LC bead prior to commercialization. (b)(4)

The 7-1 product formulated by BioCure remains identical to the original submissions. This model is referred to as Bead Block

The 7-11 product formulated by BioCure remains identical to the original submissions. This model is referred to as LC Bead

It is the intent of Biocompatibles UK Ltd., in this pre-market notification, to market the LC Bead and Bead Block™, manufactured at the facilities of Biocompatibles UK Ltd under the KR D product code, under which the identical product form BioCure INC is approved.. This is the addition of a product code only. This submission is identical to that submitted for K042231, except for the following updates:

- GelSpheres was renamed LC Bead and disclosed to the FDA. This submission refers to LC Bead throughout
- Change of Sterilizer (b)(4)
- Change of Name for Endotoxin Test House, (b)(4)
- Minor changes to transcription errors in manufacturing section.

Note: the Standards data reports (Form 3654) for each Standard referenced in this submission are included in Appendix II.

## **2.2 Legally Marketed Device:**

### **a. Trade / Proprietary Name:**

LC Bead Microspheres

Bead Block™ Compressible Microspheres

### **b. Classification Name / code Common Name:**

Vascular embolization device.

(KR D) Embolic Agent

### **c. Establishment Registration:**

# 3002124545

### **d. Manufacturing Facility:**

Biocompatibles UK Ltd.

Chapman House

Farnham Business Park

Weydon Lane  
Farnham, Surrey,  
England GU9 8QL

**e. Classification:**

Class II

**f. Reason for 510(k):**

Requesting that the Classification Code KRD be noted on the SE letter. Other than a trade name change to LC Bead, and minor process variations, the product in this 510k is identical to that in each of the listed predicates.

**g. Equivalent Devices:**

LC Bead and Bead Block™ is substantially equivalent to:

- LC Bead Microspheres (formerly GelSpheres)
  - BioCure, Inc, (K023089)
- LC Bead Microspheres & Bead Block™ Compressible Microspheres
  - Biocompatibles UK Ltd. (K033761)
- Bead Block™ Compressible Microspheres & LC Bead Microspheres
  - Biocompatibles UK Ltd. (K042231)

**h. Standards / Special Controls:**

Artificial embolization devices have special controls as published by FDA in 2004” Class II Special Controls Guidance Document: Vascular and Neurovascular Embolization Devices . Documentation of compliance with all respective standards was provided in K023089, and K042231). A letter of Access to K023089 from BioCure is included in Appendix I. Biocompatibles UK Ltd. LC Bead meets the requirements of this Guidance. Biocompatibles UK Ltd. LC Bead conform to the following recognized standards.

- 21CFR820; 1996: Quality System Regulation
- Guidance For Industry; 2004: FDA Guidance for Neurological Embolization Products



### **3 Certification Statement**

#### **PREMARKET NOTIFICATION CONFORMITY TO APPLICABLE STANDARDS**

I certify that in my capacity as Director, Regulatory Affairs of Biocompatibles UK Ltd. that I believe to the best of my knowledge, that the LC Bead Microspheres and Bead Block™ Compressible Microspheres (Artificial Embolization Agent) conforms to the requirements of the following standards as applicable:

- Tripartite Guidance – 1987 (G87-1)
- FDA Guidance on Validation of LAL as End Product Endotoxin Test for Human and Animal Parenteral Drugs and Medical Devices; (1997)
- FDA Guidance for Neurological Embolization Devices (2004)
- FDA ORDB 510K Sterility Review Guidance (07/1997)
- ISO 10993 Parts 1-13 as applicable
- ANSI/AAMI 14937 – Sterilization of Health Care products (2000)
- AAMI/ISO 11134 - Requirements for Validation and routine control- Industrial moist heat Sterilization 2<sup>nd</sup> Ed
- ISO/EN 11607 – Packaging for terminally Sterilized devices
- ISO 14971 - Medical devices – Risk management – Part 1: Application of risk analysis



\_\_\_\_\_  
Alistair Taylor, Director, Regulatory Affairs, Biocompatibles UK Ltd.

13th October 2008

Date

#### **LC Bead /Bead Block™ Compressible Microspheres**

510(k) Premarket Notification Title

\_\_\_\_\_  
510(k) Premarket Notification Number

**Biocompatibles UK Ltd**

510(k) Number(if known): \_\_\_\_\_

Device Name:

**LC Bead Microspheres  
Bead Block™ Compressible Microspheres**

Indications For Use:

***"LC Bead Microspheres & Bead Block™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."***

---

**Prescription Use X OR Over-The-Counter Use \_\_\_**  
(Per 21 CFR 801.109)

PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED)

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Concurrence of CDRH, Office of Device Evaluation (ODE)

(Optional Format 1-2-96)

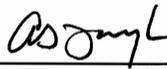
Certification Statement

**Bead Block and LC Bead**

**Page 15 of 120**

PREMARKET NOTIFICATION  
TRUTHFUL AND ACCURATE STATEMENT  
(As Required by 21 CFR 807.87(j))

I certify, that in my capacity as Director, Regulatory Affairs of Biocompatibles UK Ltd., that I believe to the best of my knowledge, that all data and information submitted on this premarket notification are truthful and accurate and that no material fact has been omitted.



\_\_\_\_\_  
Alistair Taylor, Director, Regulatory Affairs, Biocompatibles UK Ltd.

13 October 2008.

Date

LC Bead/Bead Block™ Compressible Microspheres  
510(k) Pre-market Notification Title

\_\_\_\_\_  
510(k) Pre-market Notification Number

**Biocompatibles UK Ltd**

## 4 510K Summary

### Submitter:

Biocompatibles UK Ltd.  
Weydon Lane  
Chapman House  
Weydon Lane, Farnham, Surrey  
+44 1252732732

### Contact:

Dr. Alistair Taylor

### 510(k) Numbers and Product Codes of equivalent devices.

BioCure, Inc,  
GelSpheres Microspheres  
510K Number: #K023089  
Product Code: HCG/KRD  
**CFR Section: 882.5950**

Biocompatibles UK Ltd.  
GelSpheres Microspheres  
Bead Block™ Compressible Microspheres  
510K Number: #K033761  
Product Code: HCG/KRD  
**CFR Section: 882.5950**

Biocompatibles UK Ltd.  
GelSpheres Microspheres  
Bead Block™ Compressible Microspheres  
510K Number: #K042231  
Product Code: HCG  
**CFR Section: 870.3300**

#### 4.1 Indications for Use and Intended Population

***“LC Bead/Bead Block™ Compressible Microspheres are indicated for Embolization of hypervascular tumors and arteriovenous malformations (AVM’s).***

##### 4.1.1 Device Description

LC Bead and Bead Block™ Compressible Microspheres are preformed soft, deformable microspheres that occlude arteries for the purpose of blocking the blood flow to a target tissue, such as a hypervascular tumor or arteriovenous malformations (AVM’s). LC Bead and Bead Block™ Compressible Microspheres consist of a macromer derived from polyvinyl alcohol (PVA). The fully polymerized microsphere is approximately 90% water and is compressible to approximately 20-30% by diameter. Bead Block™ Compressible Microspheres is dyed blue (LC Bead are available in natural color) to aid in the visualization of the microspheres in the delivery syringe. The microspheres can be delivered through typical microcatheters in the 1.8-5Fr range.

LC Bead Microspheres is supplied sterile and packaged in sealed glass vials. Bead Block™ Compressible Microspheres is supplied sterile and packaged in a polycarbonate syringe. Two quantities will be available in a vial: (1) 1.0 mL LC Bead /Bead Block™ Compressible Microspheres in sterile physiologic buffered saline (PBS) to a volume of 8 mL, and (2) 2.0mL LC Bead/Bead Block™ Compressible Microspheres in sterile PBS to a volume of 8 mL.

LC Bead and Bead Block Compressible Microspheres are supplied in several unit sizes covering the range from 100µm to 1200µm diameter.

At the time of use, LC Bead/Bead Block™ Compressible Microspheres is mixed with a nonionic contrast agent, e.g. Omnipaque, to make a 30-50% by weight solution. The bolus of contrast agent elutes from the vascular bed to leave a radiolucent, embolized vessel.

#### 4.2 Similarities and Differences to Predicates

The Intended Use of LC Bead /Bead Block™ Compressible Microspheres and the predicate device are the same and unchanged other than product names. This pre-

market notification addresses Biocompatibles UK Ltd. intent to market LC Bead with the Vascular (KRD) Code and to update its registration and listing with this code.

Other than trade name there are no differences when comparing Biocompatibles, LC Bead/Bead Block™ to the predicate devices.

#### 4.3 Performance Standards

LC Bead/Bead Block Compressible Microspheres meet the following

Performance Standards:

- Guidance For Industry; 2004: FDA Guidance for Neurological Embolization Products
- ISO/EN 10993-1; 1997 Biological Evaluation of Medical Devices, Part 1: Evaluation and Testing
- ISO/EN 10993-3; 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.
- ISO/EN 10993-4; 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood.
- ISO/EN 10993-6; 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.
- ISO/EN 10993-10; 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.
- ISO/EN 10993-11; 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.
- ISO/EN 11607; 1997 – Packaging for terminally sterilized products.
- AAMI 11134; 1993 – Sterilization of Health Care Products – Requirements for validation and routine control – Industrial moist heat sterilization 2<sup>nd</sup> edition.
- ANSI/AAMI/ISO 14937; 2000 – Sterilization of Health Care Products – Characterization of a Sterilizing Agent and the Development, Validation and Routine Control of a Sterilization Process for Medical Devices.
- EN 554: Sterilization of Medical Devices – validation and Routine Control of Sterilization by Moist Heat

#### 4.4 Conclusion

There are more similarities than differences between the predicate device and the Biocompatibles LC Bead/Bead Block™ Compressible Microspheres. The product, manufacturing and primary packaging are unchanged from K023089/K033761. The predicate device and LC Bead/Bead Block™ Compressible Microspheres have the same intended use, warnings and contraindications. The predicate device and LC Bead/Bead Block™ Compressible Microspheres are identical in design, and unchanged from K023089. When used in accordance with the instructions for use, by qualified personnel, the Biocompatibles LC Bead/Bead Block™ Compressible Microspheres are safe and effective, as indicated, for the intended use.

### 5 Device Description

#### 5.1 General Device Description

LC Bead Microspheres and Bead Block™ Compressible Microspheres (Artificial Embolization Agent) are preformed soft, deformable microspheres that occlude arteries for the purpose of blocking the blood flow to a target tissue, such as a fibroid or a cancerous tumor. LC Bead Microspheres and Bead Block™ Compressible Microspheres consists of a macromer derived from polyvinyl alcohol (PVA). The fully polymerized microsphere is approximately 85% water and is compressible to approximately 30% by diameter. Bead Block™ Compressible Microspheres is dyed blue to aid in the visualization of the microspheres in the delivery syringe. LC Bead are either un-dyed and in a natural color or dyed blue. The microspheres can be delivered through typical microcatheters in the 1.5-5Fr range.

The product will be supplied sterile and packaged in sealed glass bottles (LC Bead) or pre-filled syringes (Bead Block™).

Two quantities will be available in vials:

- 1 mL LC Bead Microspheres in sterile physiologic buffered saline (PBS) to a volume of 8 mL.
- 2.0mL LC Bead Microspheres in sterile PBS to a volume of 8 mL.

Two quantities will be available in pre-filled syringes:

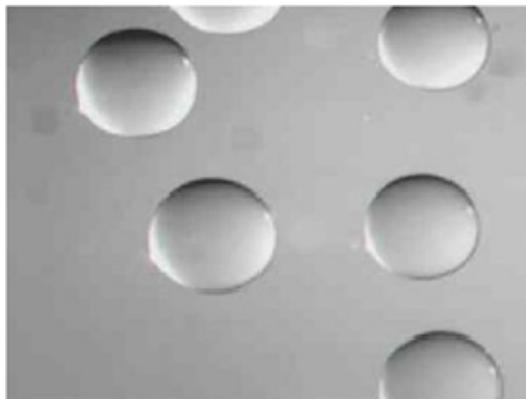
- 1 mL Bead Block™ Compressible Microspheres in syringes to a volume of 5 mL.

- 2.0mL Bead Block™ Compressible Microspheres in syringes to a volume of 5 mL.

The shelf life of LC Bead Microspheres and Bead Block™ Compressible Microspheres is 2 years minimally.

Undyed LC Bead Model numbers beginning with the letters UB are provided in vials and contain (b)(4) co-monomer. Blue dyed LC Bead beginning with the letters VE are provided in vials and contain (b)(4) co-monomer. Bead Block™ Compressible Microspheres Model numbers beginning with the letters EB series are provided in a pre-filled syringe and contain (b)(4) and are dyed Blue as described below. There are no other differences between the LC Bead Microspheres and Bead Block™ Compressible Microspheres. Detailed discussion of LC Bead Microspheres and Bead Block™ Compressible Microspheres chemistry is provided later in this section.

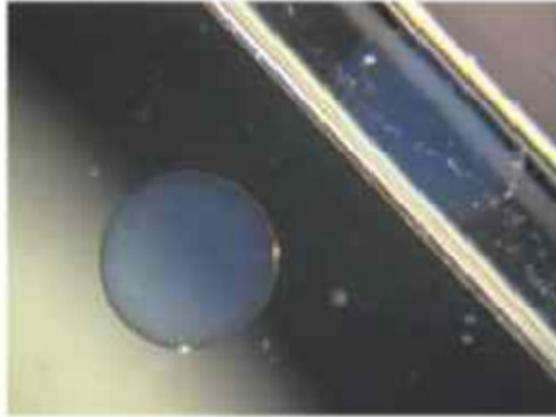
LC Bead Microspheres and Bead Block™ Compressible Microspheres is supplied in several units covering the range from 100µm to 1200µm diameter. The product size ranges are listed below:



100-300µm, 300-500µm, 500-700µm, 700-900µm, 900-1200µm

**Figure 5-1 LC Bead Embolic Agent (ca. 500µm diameter)**

At the time of use, LC Bead Microspheres and Bead Block™ Compressible Microspheres is mixed with a nonionic contrast agent, e.g. Omnipaque, to make a 30-50% by weight solution. The bolus of contrast agent elutes from the vascular bed to leave a radiolucent, embolized vessel.



**Figure 5-2 Bead Block™ geometry and appearance in Catheter Lumen**

The vial containing LC Bead Microspheres is, packaged in a cardboard box. The LC Bead are contained in a sealed glass vial. The vial contains the LC Bead in a solution of (b)(4). The vial contents are sealed using a rubber stopper with metal retaining ring, and is provided 'STERILE' (vial contents are sterile) by moist heat sterilization. LC Bead are labeled as "NON PYROGENIC". The LC Bead Microspheres is for single-use only. Vial stopper caps are color coded according to the size of the LC Bead contained in the vial.

Pre-filled syringes with Bead Block™ are packaged in a polycarbonate tray with Tyvek® lid stock. The syringe is made of polycarbonate with a silicone rubber bung.

Bead Block™ Compressible Microspheres is available in the following configurations:

Product Code	Size Range	Quantity Bead Block	Quantity Saline
EB1S103	100-300µm	1ml	5ml
EB1S305	300-500µm	1ml	5ml
EB1S507	500-700µm	1ml	5ml
EB1S709	700-900µm	1ml	5ml
EB1S912	900-1200µm	1ml	5ml
EB2S103	100-300µm	2ml	4ml
EB2S305	300-500µm	2ml	4ml
EB2S507	500-700µm	2ml	4ml
EB2S709	700-900µm	2ml	4ml
EB2S912	900-1200µm	2ml	4ml

LC Bead Microspheres™ (Undyed) is available in the following configurations:

Product Code	Size Range	Quantity Bead Block	Quantity Saline
UB1V103	100-300 $\mu$ m	1ml	7ml
UB1V305	300-500 $\mu$ m	1ml	7ml
UB1V507	500-700 $\mu$ m	1ml	7ml
UB1V709	700-900 $\mu$ m	1ml	7ml
UB1V912	900-1200 $\mu$ m	1ml	7ml
UB2V103	100-300 $\mu$ m	2ml	6ml
UB2V305	300-500 $\mu$ m	2ml	6ml
UB2V507	500-700 $\mu$ m	2ml	6ml
UB2V709	700-900 $\mu$ m	2ml	6ml
UB2V912	900-1200 $\mu$ m	2ml	6ml

LC Bead Microspheres™ dyed blue is available in the following configurations:

Product Code	Size Range	Quantity Bead Block	Quantity Saline
VE210GS	100-300 $\mu$ m	1ml	7ml
VE410GS	300-500 $\mu$ m	1ml	7ml
VE610GS	500-700 $\mu$ m	1ml	7ml
VE810GS	700-900 $\mu$ m	1ml	7ml
VE1010GS	900-1200 $\mu$ m	1ml	7ml
VE220GS	100-300 $\mu$ m	2ml	6ml
VE420GS	300-500 $\mu$ m	2ml	6ml
VE620GS	500-700 $\mu$ m	2ml	6ml
VE820GS	700-900 $\mu$ m	2ml	6ml
VE1020GS	900-1200 $\mu$ m	2ml	6ml



Figure 5-3 LC Bead in Vial



**Figure 5-4 Bead Block™ in Syringe**

## **5.2 Indication for Use and Intended Population**

### **5.2.1 Indication for use Statement**

Although Biocompatibles UK Ltd. believes that LC Bead Microspheres and Bead Block™ Compressible Microspheres may have several clinical uses, the indication for use is the following:

***" LC Bead Microspheres / Bead Block™ Compressible Microspheres are intended for embolization of hypervascular tumors and arteriovenous malformations."***

The Indications For Use Statement in the prescribed format is provided in Section 3.0

### **5.2.2 Intended Use Population**

Hypervascular tumors are the most widely embolized vascular tissues. According to literature searches conducted in two prominent peer review journals, *Radiology* and *Journal of Vascular and Interventional Radiology* on publications during the past ten years, hypervascular tumors represent a broad range of tissues as shown below:

**(Note:** Biocompatibles UK Ltd. does not plan to use the specific list below for the product labeling or for the Indications for Use. This information is provided to present to the reviewer examples of Hypervascular Tumors)

- Liver cancer (hepatocellular carcinoma)
- Kidney cancer (renal cell carcinoma)
- Pancreatic cancer
- Bladder cancer
- Splenic cancer
- Spinal tumors
- Biliary cancer
- Peripheral and Neurovascular AVM's

**The company intends to make no references to uterine fibroid embolization under this pre-market notification.**

The common feature of these hypervascular tumors is that their blood supply usually originates from small arteries that can be accessed via selective catheterization. The arteries leading to these hypervascular tumors range from mid-size arteries (1708 $\mu$ m) to very small arterioles (100 $\mu$ m). The general procedure involves accessing the tumor site by a feeder artery with a catheter of appropriate size followed by injection of the embolic agent into the arterial stream. In all cases, the embolic effect involves the blockage of these small arteries with particulate or liquid embolic agents. To date, hypervascular tumors have been embolized by several embolic agents, including polyvinyl alcohol (PVA) particles (e.g. Contour PVA), gelatin sponges, ethanol, compressible microspheres (Embosphere® microspheres), n-butyl cyanoacrylate (TruFill® nBCA), and ethylene vinyl acetate in DMSO (Onyx™). Although these agents block blood supply to the hypervascular tumors resulting ischemia of the tissue, some clinicians also use adjunctive agents with the embolic agents, including ethiodized oils, particularly for hepatocellular carcinoma. The embolization of these hypervascular tumors can also take place prior to surgical removal of the cancerous tissue, such as in the pre-surgical devascularization of a liver or a kidney tumor.

Arteriovenous malformations are abnormal blood vessels which may exist in the brain and other anatomical locations. AVM's develop when there are abnormal communications that directly connect relatively large arteries to veins. The blood is exchanged at a relatively higher pressure with greater blood flow to the vein. The anatomy of the vein is not designed to take arterial pressure and/or flow rate thus. In the

presence of an AVM the vein expands and pushes against the normal brain tissue. This may have a variety of neurological effects. Often there is a rupture in the supplying arteries, the AVM itself, or the enlarged veins which results in an intracranial hemorrhage. AVM's in other parts of the anatomy will have a similar effect to the associated veins and resulting complications. AVM's have been embolized using several embolic agents, including polyvinyl alcohol (PVA) particles (e.g. Contour PVA), gelatin sponges, ethanol, compressible microspheres (Embosphere® microspheres), n-butyl cyanoacrylate (TruFill® nBCA).

### 5.2.3 Contraindications

The Contraindications listed below is included in the LC Bead Microspheres and Bead Block™ Compressible Microspheres Instructions for Use (see Section 7.0 – Device Labeling).

- Patients intolerant to occlusion procedures
- Vascular anatomy or blood that precludes catheter placement or emboli injection
- Presence or likely onset of vasospasm
- Presence or likely onset of hemorrhage
- Presence of severe atheromatous disease
- Presence of feeding arteries smaller than distal branches from which they emerge
- Presence of patent extra-to-intracranial anastomoses or shunts
- Presence of collateral vessel pathways potentially endangering normal territories during embolization
- Presence of end arteries leading directly to cranial nerves
- Presence of arteries supplying the lesion not large enough to accept LC Bead Microspheres and Bead Block™ Compressible Microspheres
- Vascular resistance peripheral to the feeding arteries precluding passage of LC Bead Microspheres and Bead Block™ Compressible Microspheres into the lesion
- Do not use LC Bead Microspheres and Bead Block™ Compressible Microspheres in the following applications:
  - Embolization of large diameter arteriovenous shunts (i.e. where the blood does not pass through the arterial / capillary / venous transition but directly from artery to vein)

- The pulmonary arterial vasculature
- Use in any vasculature where the use of LC Bead Microspheres and Bead Block™ Compressible Microspheres could pass directly into the internal carotid artery or the above listed vessels.

#### 5.2.4 Warnings

The Warning statement below is included in the LC Bead Microspheres and Bead Block™ Compressible Microspheres Instructions for Use (see Section 7.0 – Device Labeling)

*“WARNING: Studies have shown that LC Bead Microspheres / Bead Block™ Compressible Microspheres do not form aggregates and, as a result, penetrate deeper into the vasculature as compared to similarly sized PVA particles. Care must be taken to choose a larger sized LC Bead/Bead Block Embolic Agent when embolizing arteriovenous malformations with large shunts to avoid passage of the particles into the pulmonary or coronary circulation.”*

#### 5.3 Device Operation

The method of application of LC Bead Microspheres and Bead Block™ Compressible Microspheres and the predicate devices is the same. All devices are intended to be delivered to selected sites through catheters with a diameter appropriate for the vascular target and the size of the emboli. Accurate placement of all of the embolization devices is assured through visualization of the embolization process using radiographic imaging. All of the devices are mixed with a radio-opacity agent prior to injection to permit visualization. LC Bead Microspheres and Bead Block™ Compressible Microspheres, like the predicate device are available in a range of sizes to permit selection of the most appropriate size for target vessels.

#### 5.4 Device Manufacturing

The manufacturing process used by Biocompatibles UK Ltd. is nearly identical to the processes used by BioCure, Inc. as described in K 042231 and K023089.

Biocompatibles purchased the rights to LC Bead Embolic Agent in September of 2003. A copy of the letter of accession to use K023089 is attached in Appendix I.

### 5.4.1 Manufacturing process

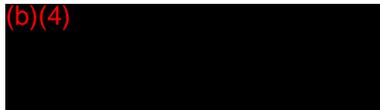
(b)(4)



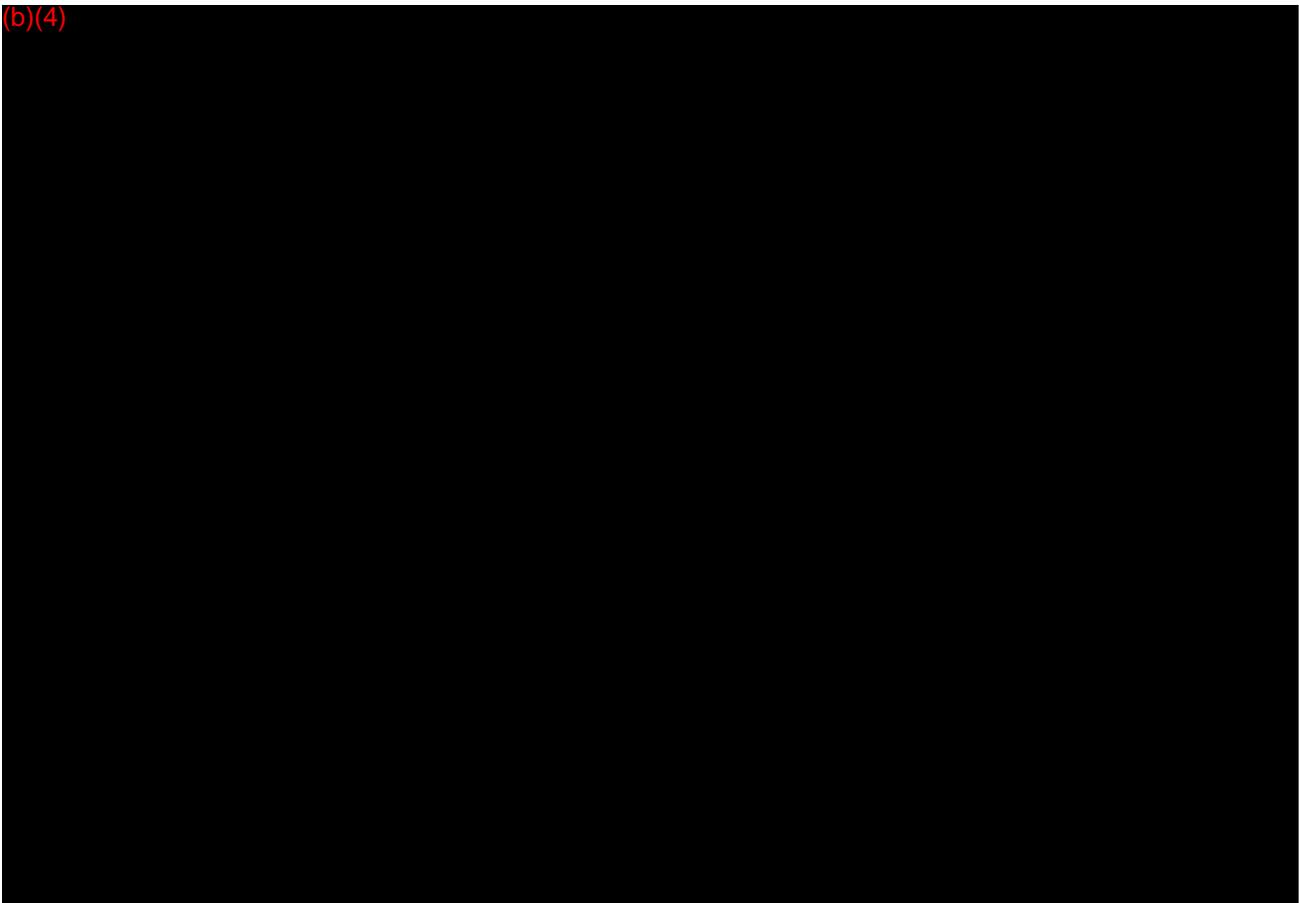
The water is specified as follows

- Endotoxin
- Bioburden

(b)(4)

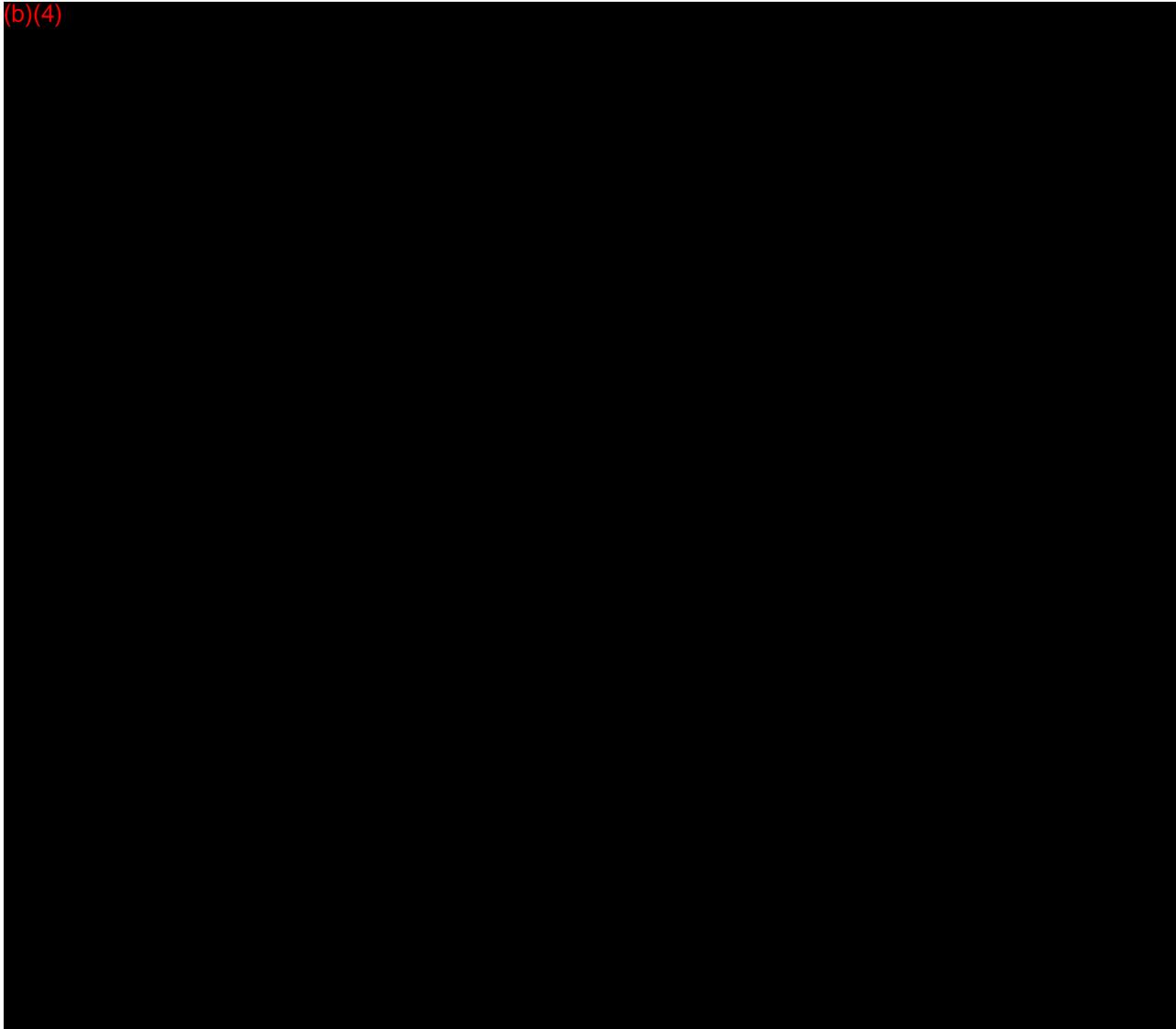


(b)(4)



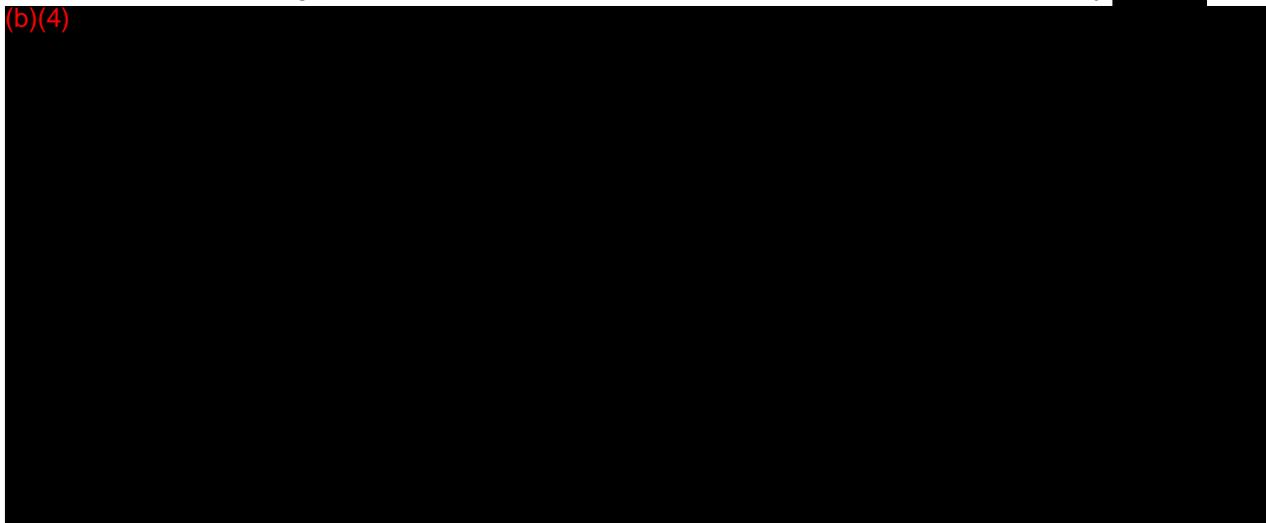
**Figure 5-5 A schematic of the water purification system used in manufacturing LC Bead and Bead Block™**

(b)(4)



The manufacturing process of LC Bead and Bead Block™ consists of essentially (b)(4)

(b)(4)



An outline of the synthetic pathway of LC Bead and Bead Block™ is provided in K023089 along with a tabulated summary of the individual materials used in production and their role in the synthetic process. The general chemical characteristics of each material is presented below. All chemicals are used as received after incoming inspection.

#### 5.4.1.1 (b)(4) macromer synthesis (step 1)

Polyvinyl alcohol (PVA) (Figure 5-6) is widely used industrial and medical polymer. The applications of PVA are as diverse as clothing fibers, thickening agents, emulsion stabilizers and wet adhesives to embolic agents and contact lenses

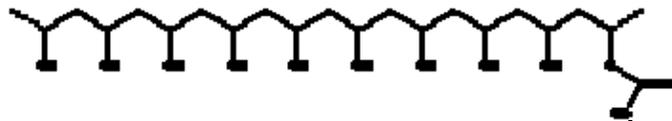


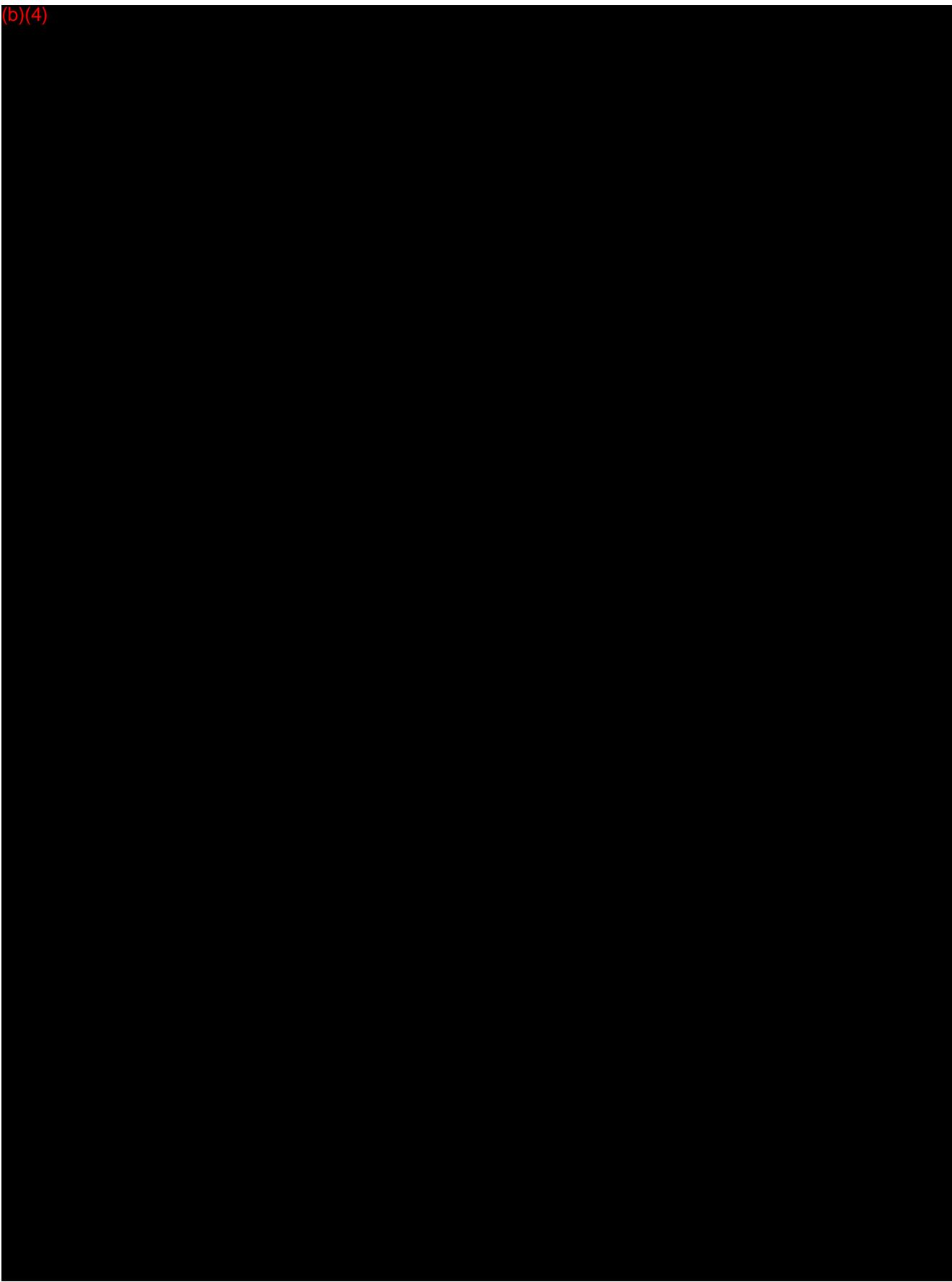
Figure 5-6 Chemical structure of PVA

PVA is a water soluble polymer made from the polymerization of vinyl acetate monomers. Polyvinyl acetate is very hydrophobic and therefore not water soluble. Alcoholysis or saponification of the polyvinyl acetate in ethanol or methanol with a alkaline or acidic catalyst causes cleavage of the pendant acetate groups to form pendant hydroxyl groups resulting in the formation of PVA (*ref. Billmyer, p.391-5*) Typically some acetate groups remain on the PVA chain. PVA can be purchased in a wide variety of molecular weights and acetate content.

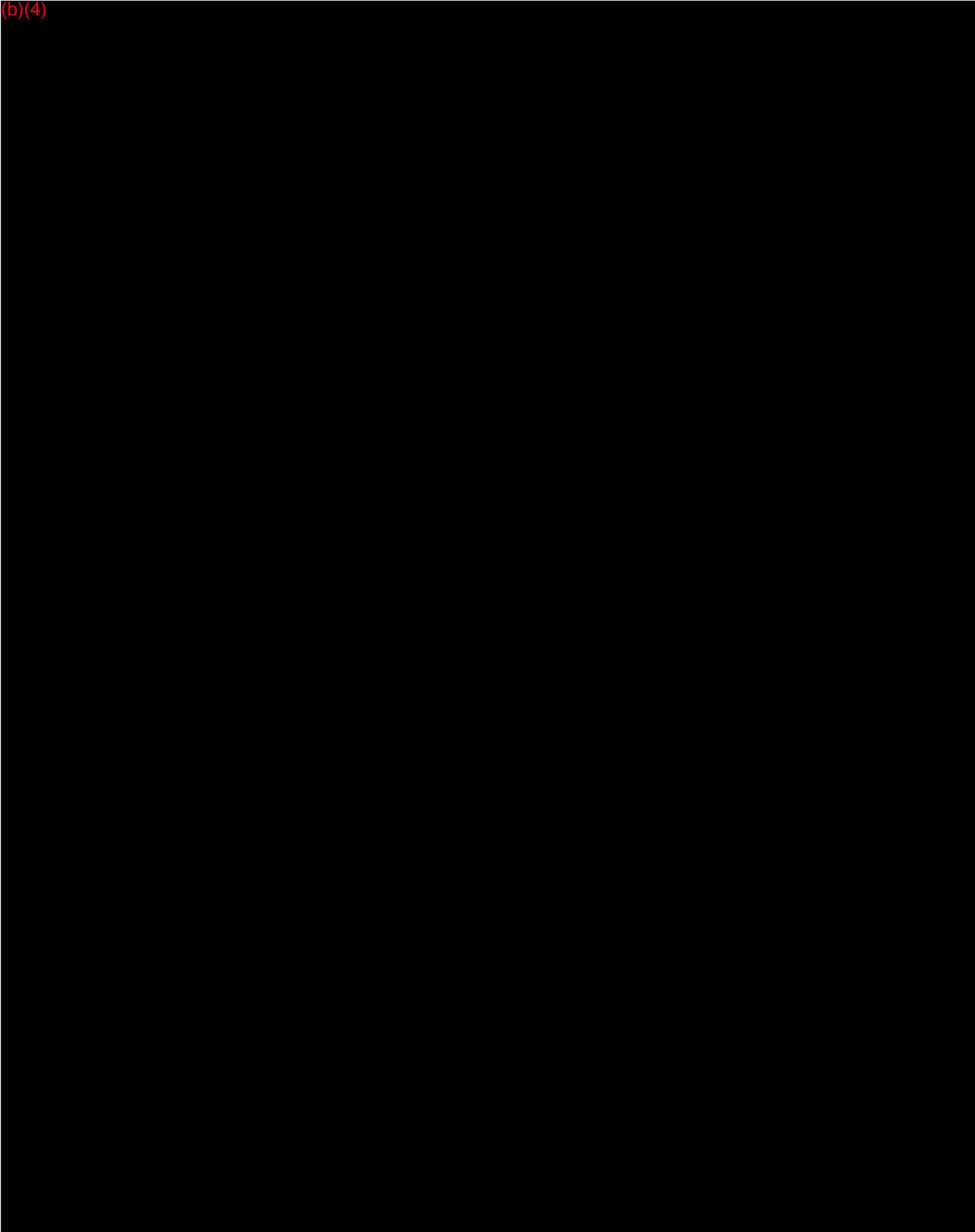
This water solubility and the presence of pendant hydroxyl groups offers the flexibility for a wide range of modifications, example hydrophobic modification with butyraldehyde for the production of safety glass (*ref. Billmyer, p.391-5*) or the addition of monomers to form water soluble polymerisable PVA macromers for manufacturing hydrogel contact lens (Muller B. Crosslinked Polymers, US 5,932,674. 1999). Embolic agents have also been prepared with PVA by crosslinking the pendant hydroxyl groups with gluteraldehyde to form tough, water insoluble particles (*Billmeyer, F.W. Jr; 'Textbook of Polymer Science', John Wiley & Son, Inc. Singapore, 1984*)

(b)(4)

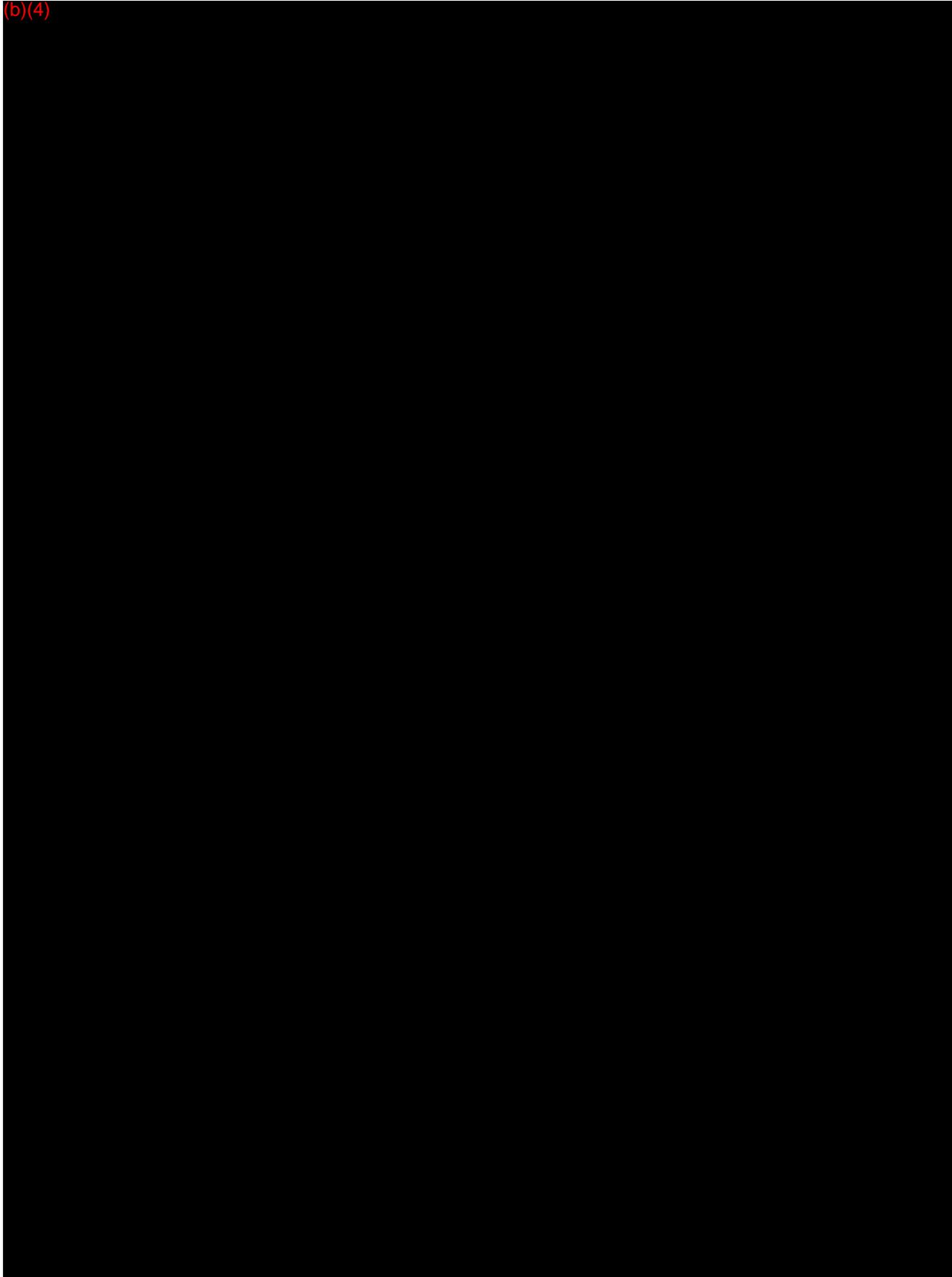
(b)(4)



(b)(4)



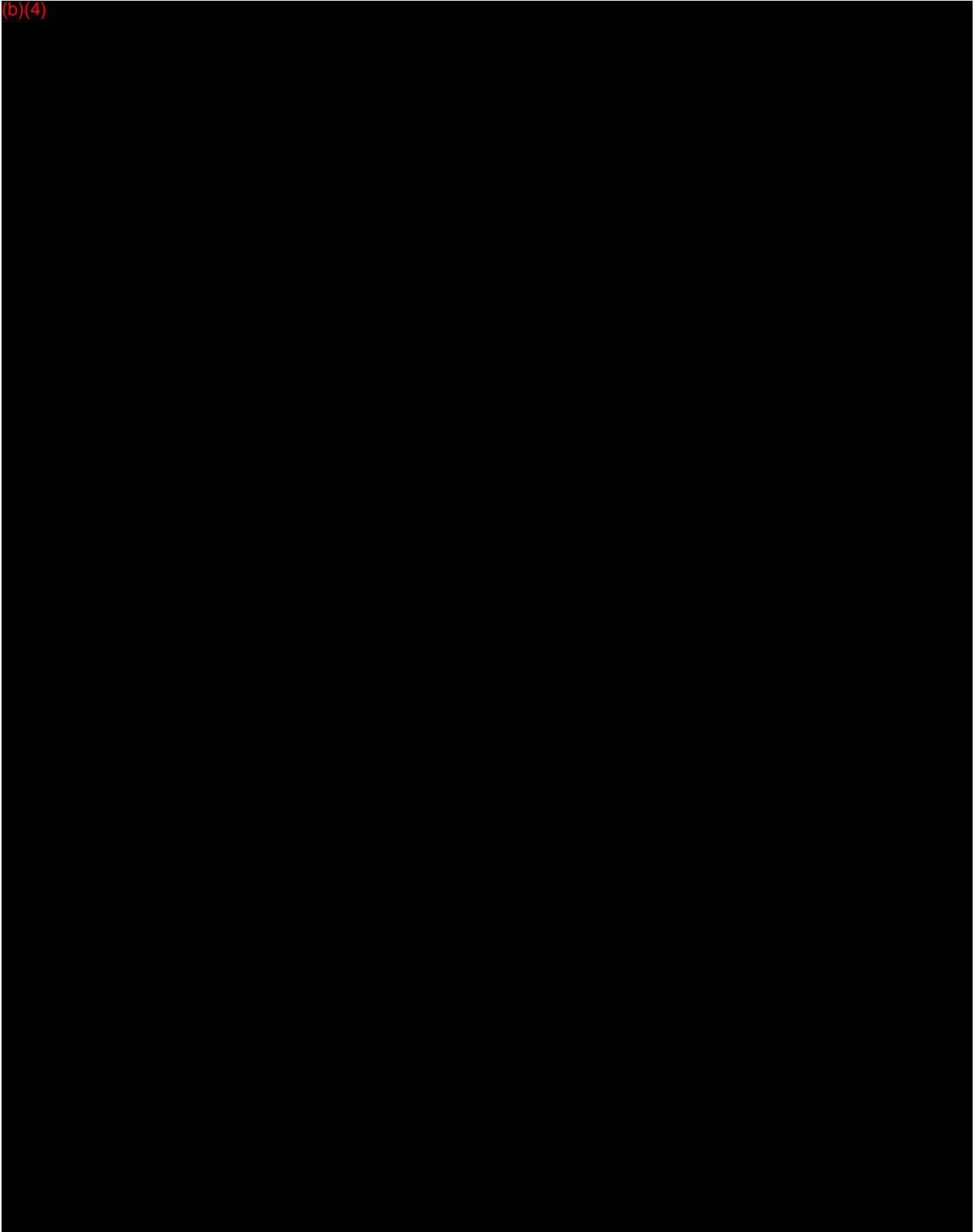
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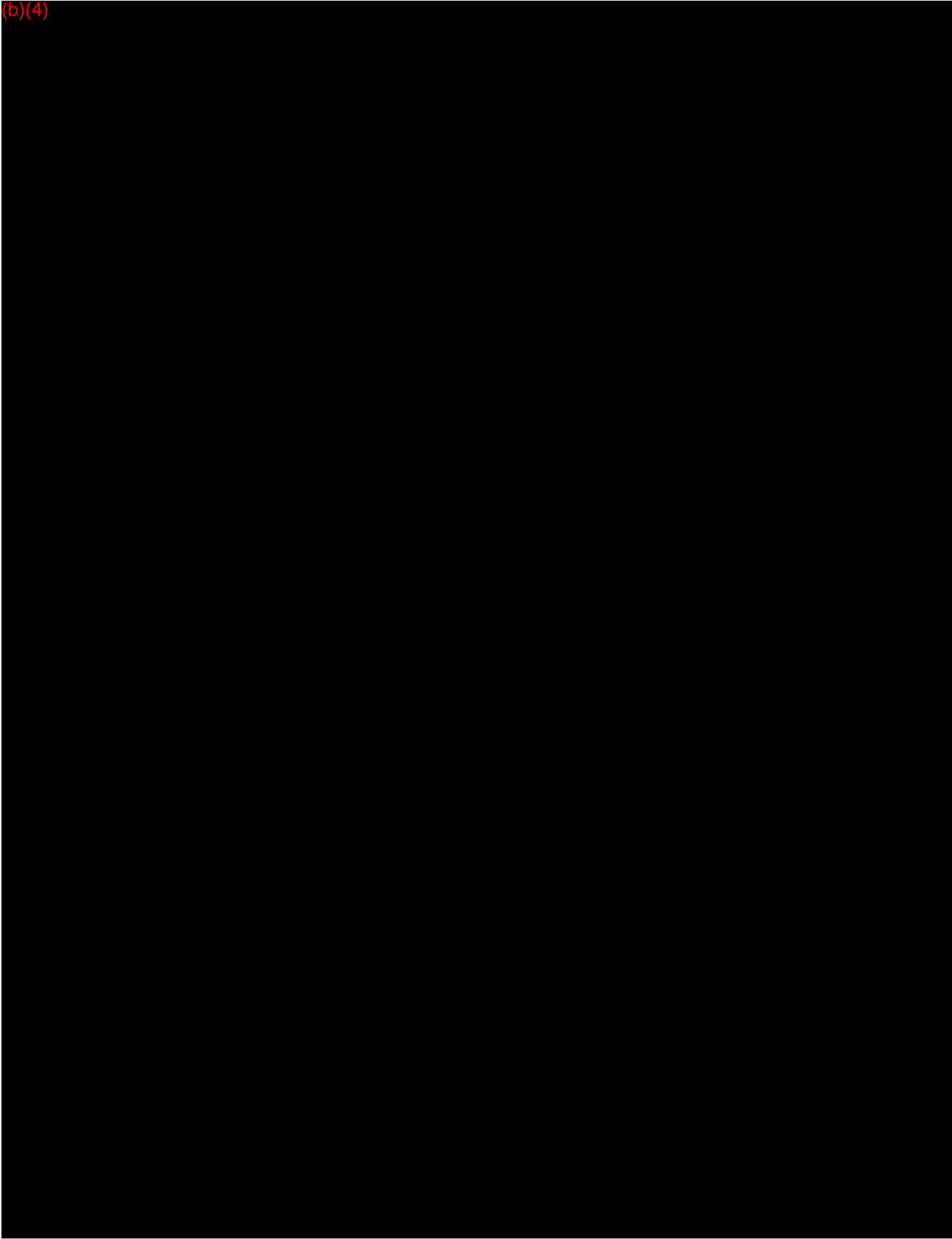
(b)(4)



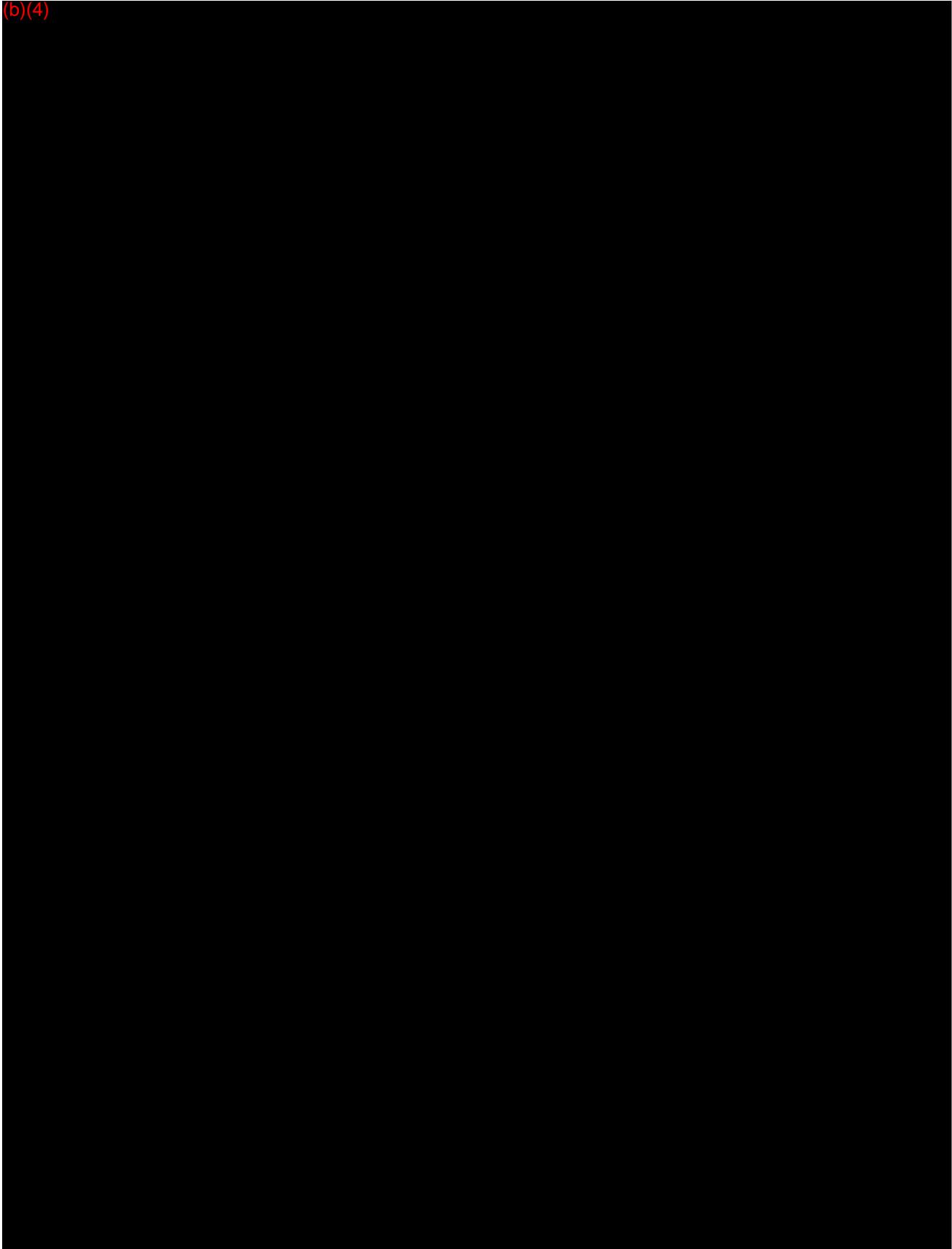
(b)(4)



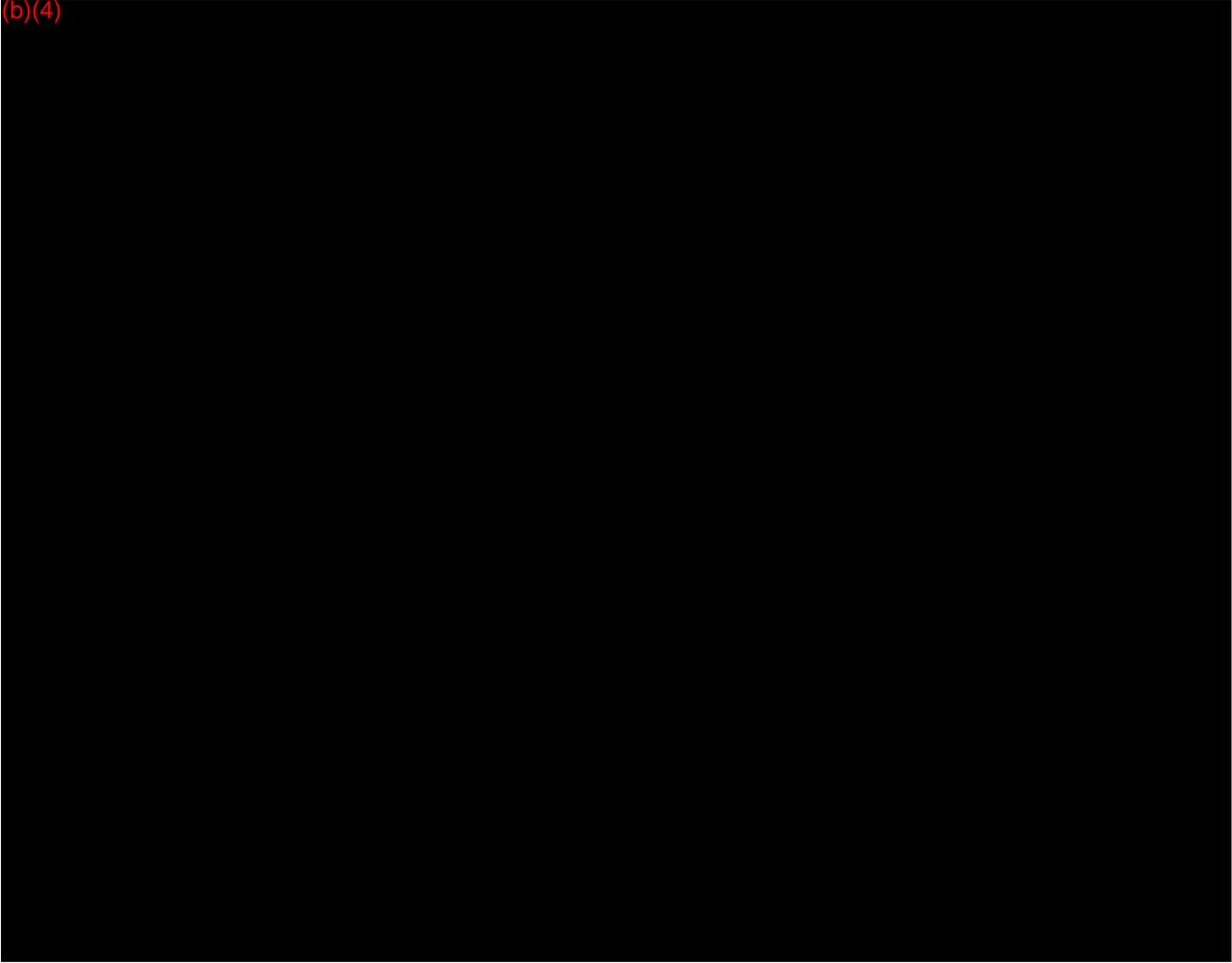
(b)(4)



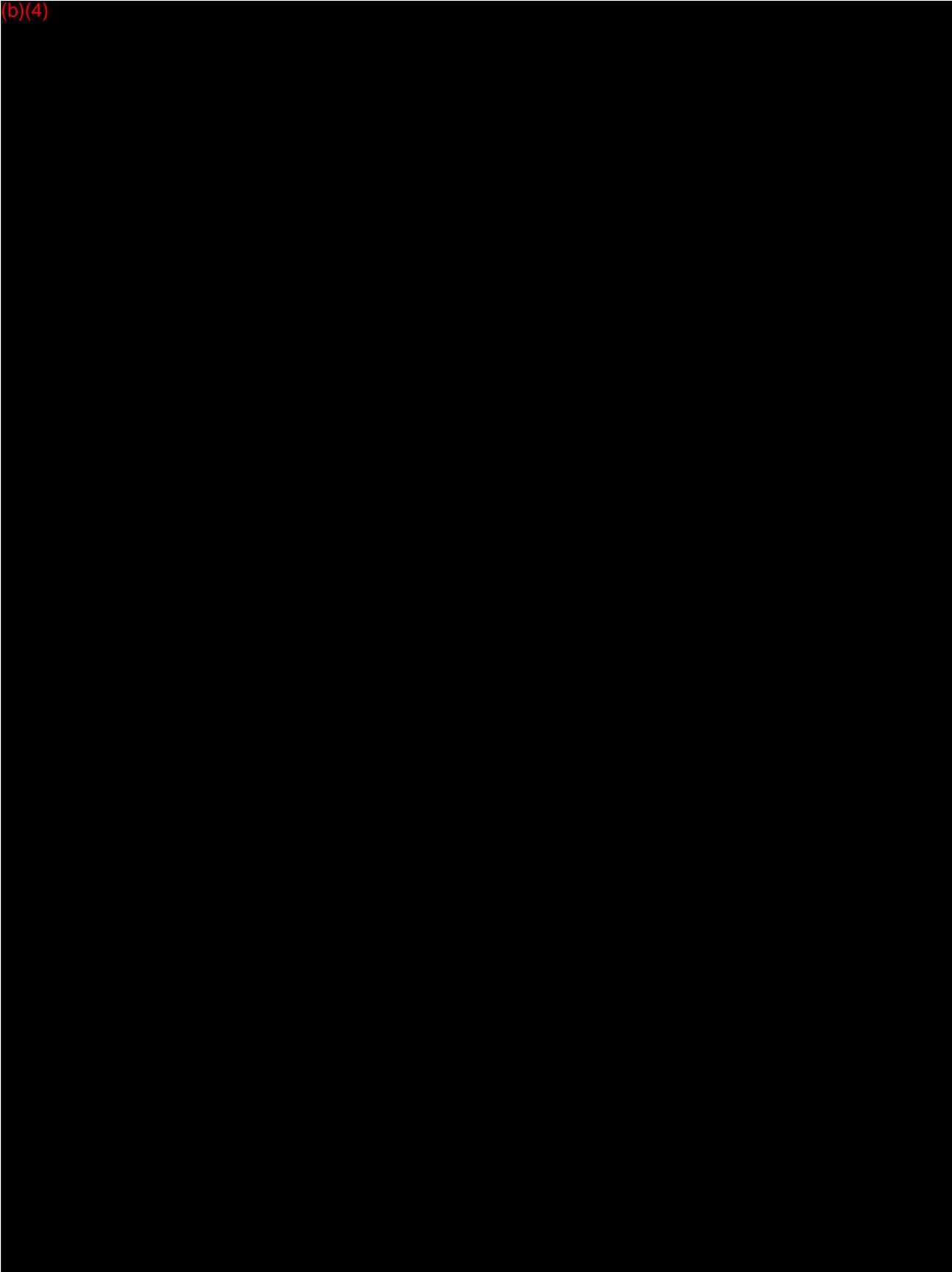
(b)(4)



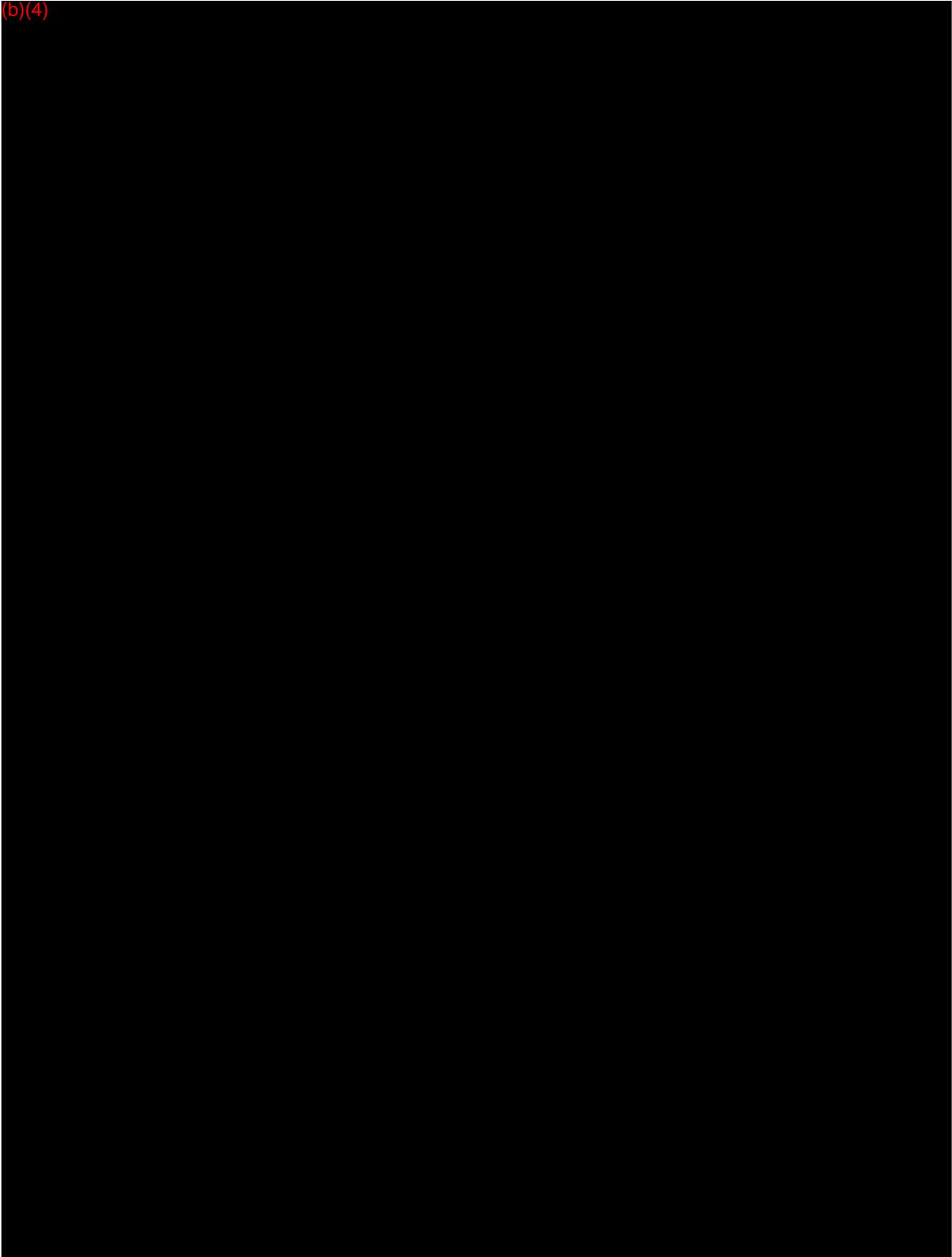
(b)(4)



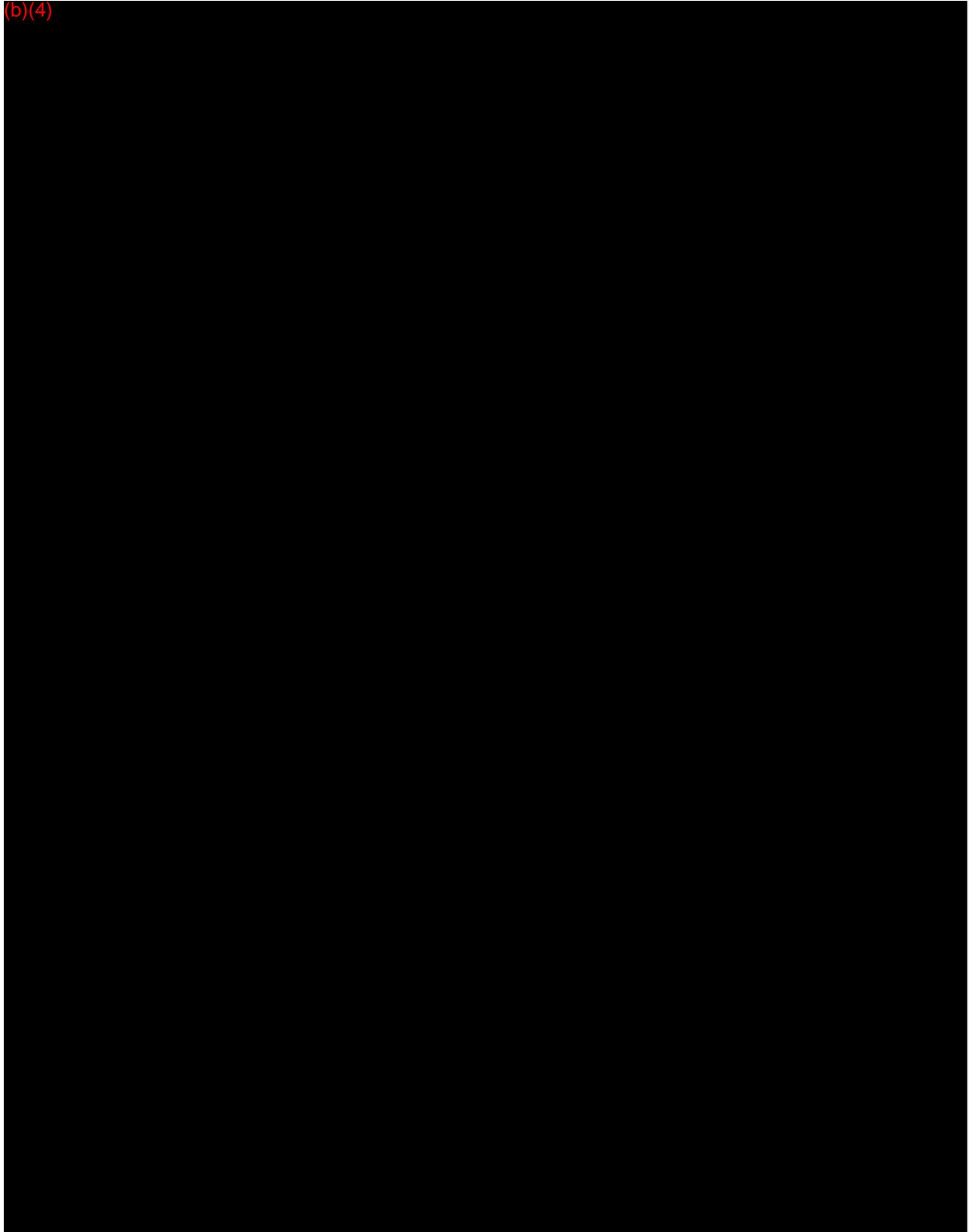
(b)(4)



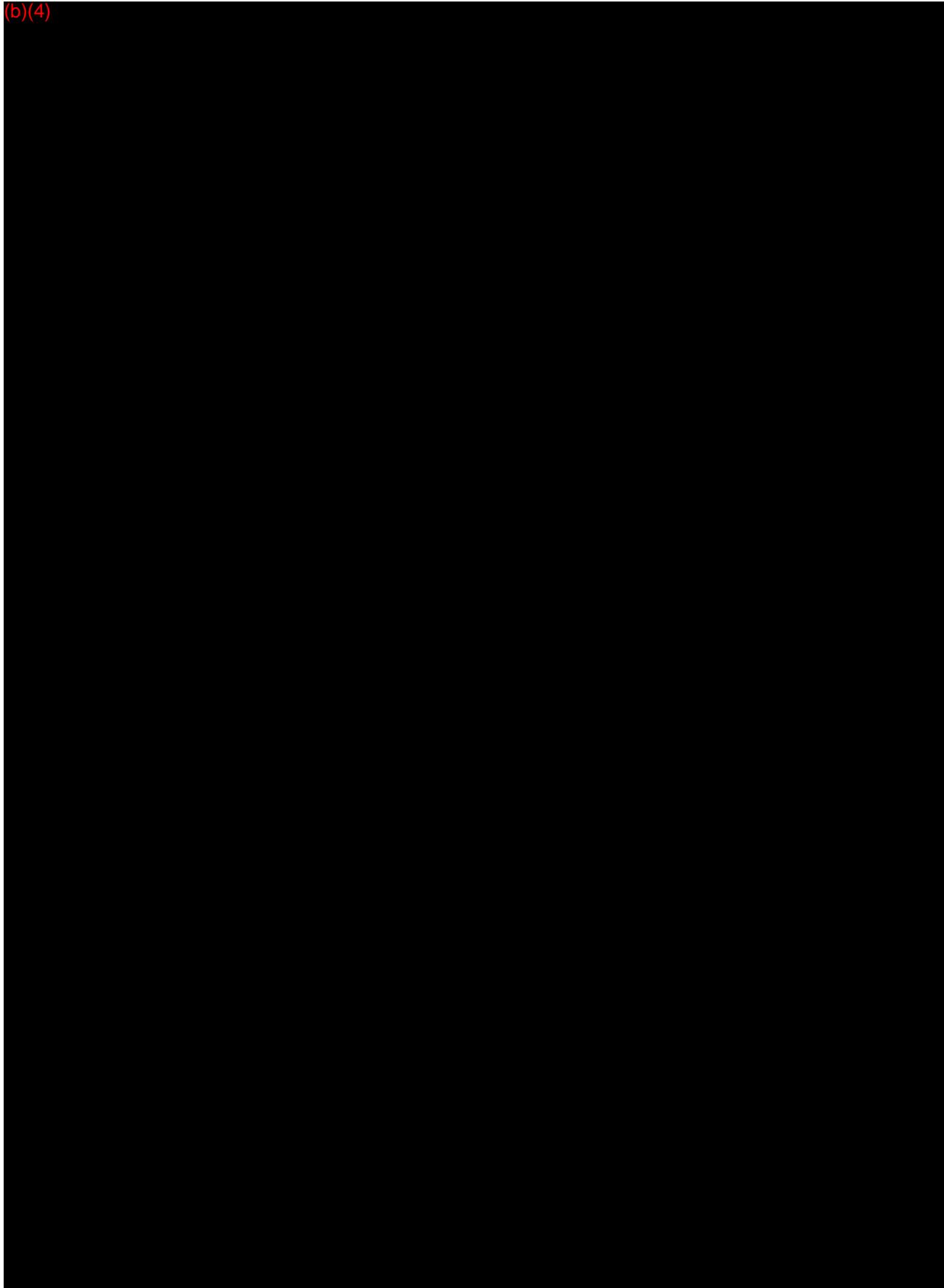
(b)(4)



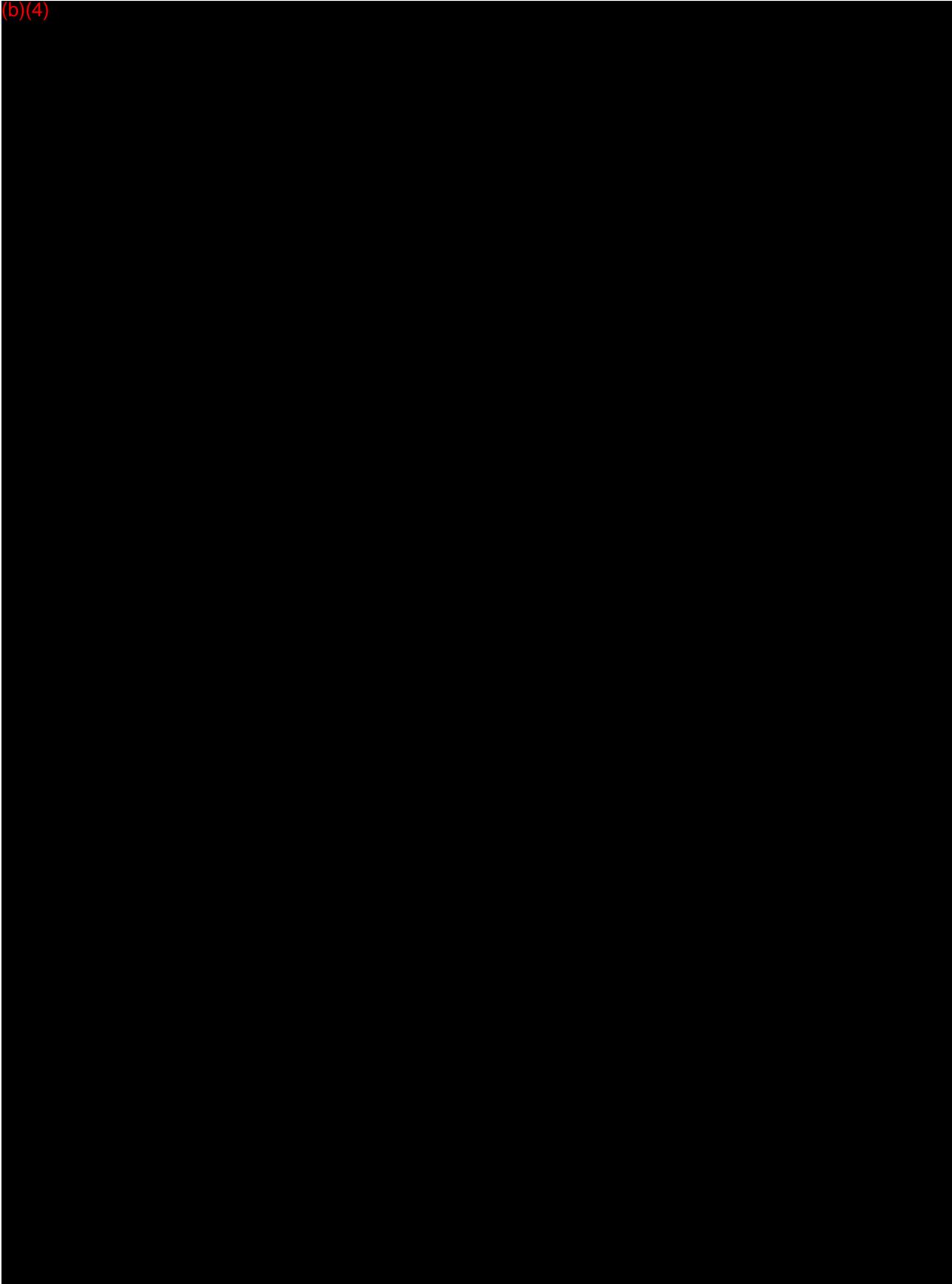
(b)(4)



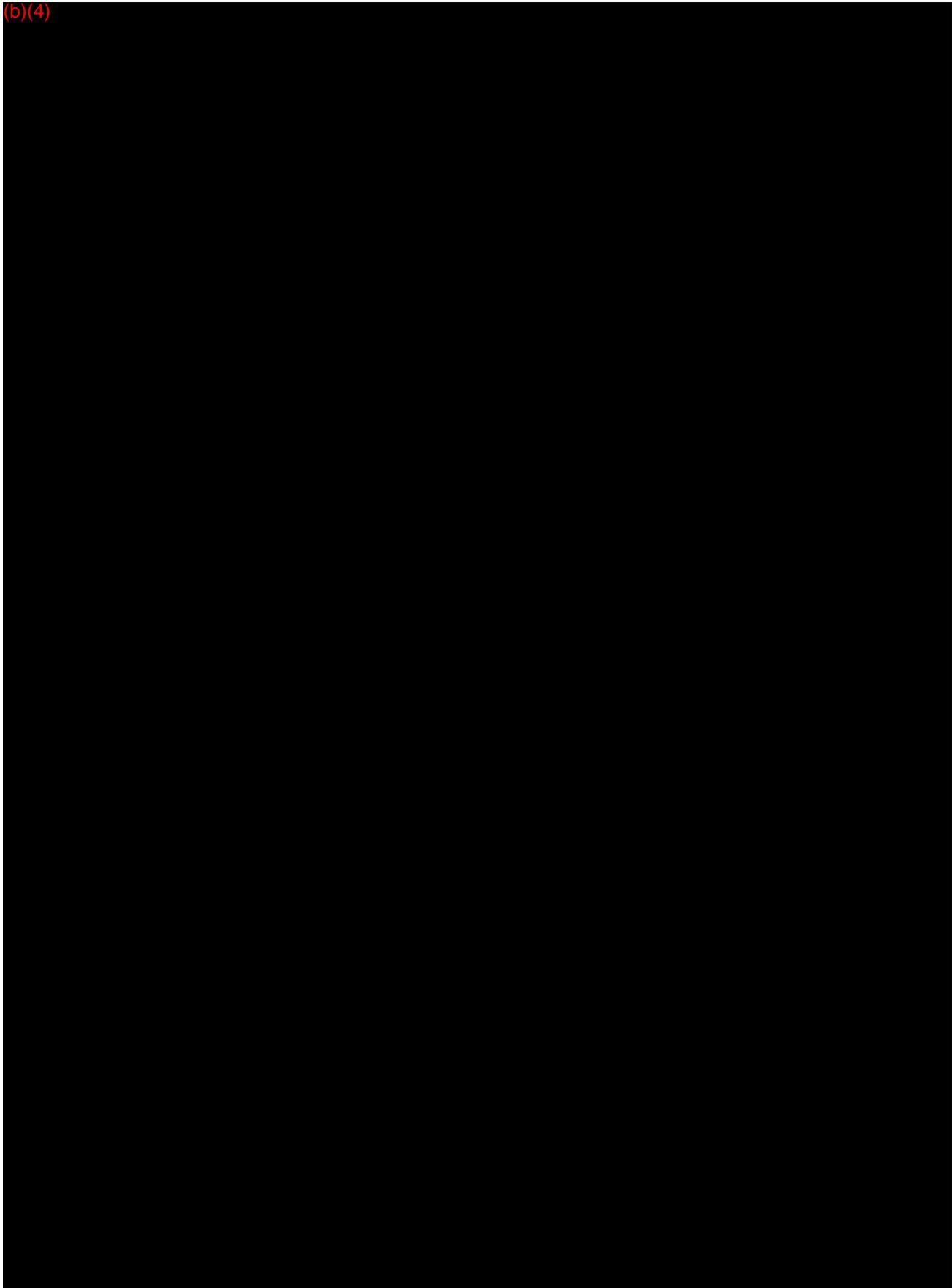
(b)(4)



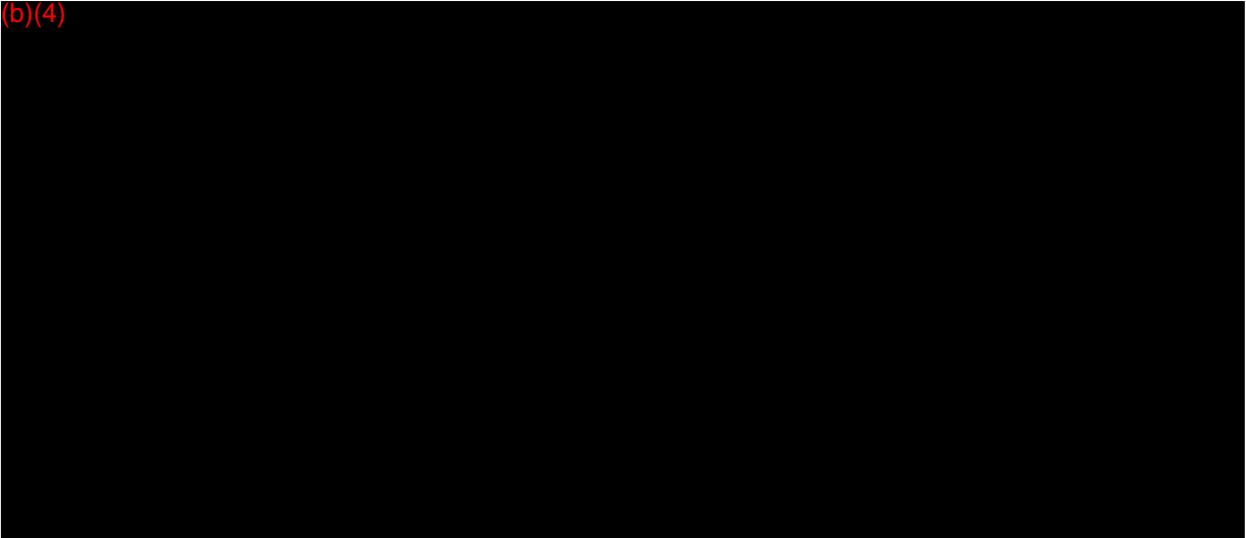
(b)(4)



(b)(4)



(b)(4)

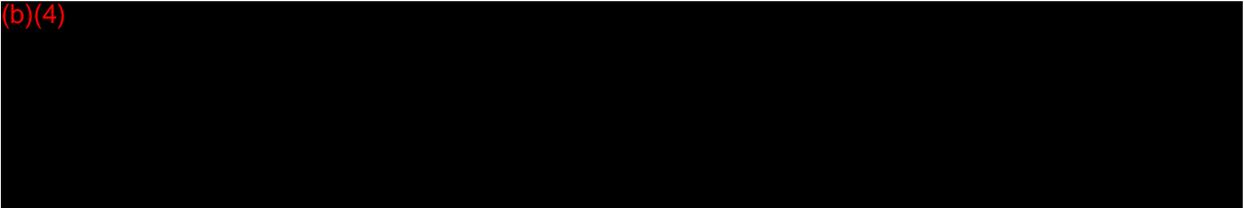


#### 5.4.1.8 Sterilization

LC Bead and Bead Block™ are labeled as “Sterile”. SAL is  $10^{-6}$  and in accordance with AAMI/ANSI/ISO 11134: Sterilization of health care products-Requirements for validation and routine control-Industrial moist heat sterilization, 2ed.. Sterilization is performed in accordance with EN 554: Sterilization of Medical Devices – validation and Routine Control of Sterilization by Moist Heat. (b)(4)



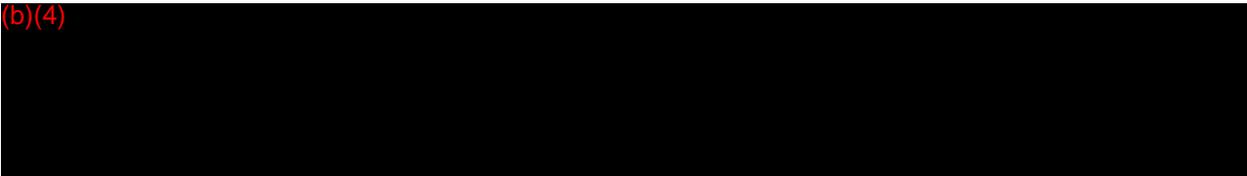
(b)(4)



The data on validation of sterilization cycles used for LC Bead and Bead Block™ is on file at Biocompatibles UK Ltd.

The certification that sterilization is in accordance with the recognized standards is included in Section 3.0 .

(b)(4)



(b)(4)

#### 5.4.1.10 Pyrogenicity

LC Bead and Bead Block™ are labeled as “Non-Pyrogenic”. Pyrogenicity and presence of endotoxins are determined using the Kinetic-Chromogenic LAL method. Endotoxin testing is performed by Lonza (formally Cambrex), Belgium. Test methods are validated by Lonza. Each lot of LC Bead and/or Bead Block™ is tested to meet the requirement of <0.06 EU/ML in accordance with the requirements of the FDA 1987 Guidance Document: Guideline on Validation of Limulus Amebocyte Lysate Test as an End Product Endotoxin Test for Human and Animal Parenteral Drugs, Biological Products and Medical Devices.

### 5.5 Packaging Materials

#### 5.5.1 Vial Description

The vials used with LC Bead are 10ml made of borosilicate clear (b)(4)

(b)(4)

#### 5.5.2 Syringe Description

The syringes used with Bead Block™ are 20ml with clear polycarbonate barrel and colored polycarbonate plunger and white printing of graduation marks. (b)(4)

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### **5.5.3 External Packaging**

#### **5.5.3.1 External Packaging for Vials**

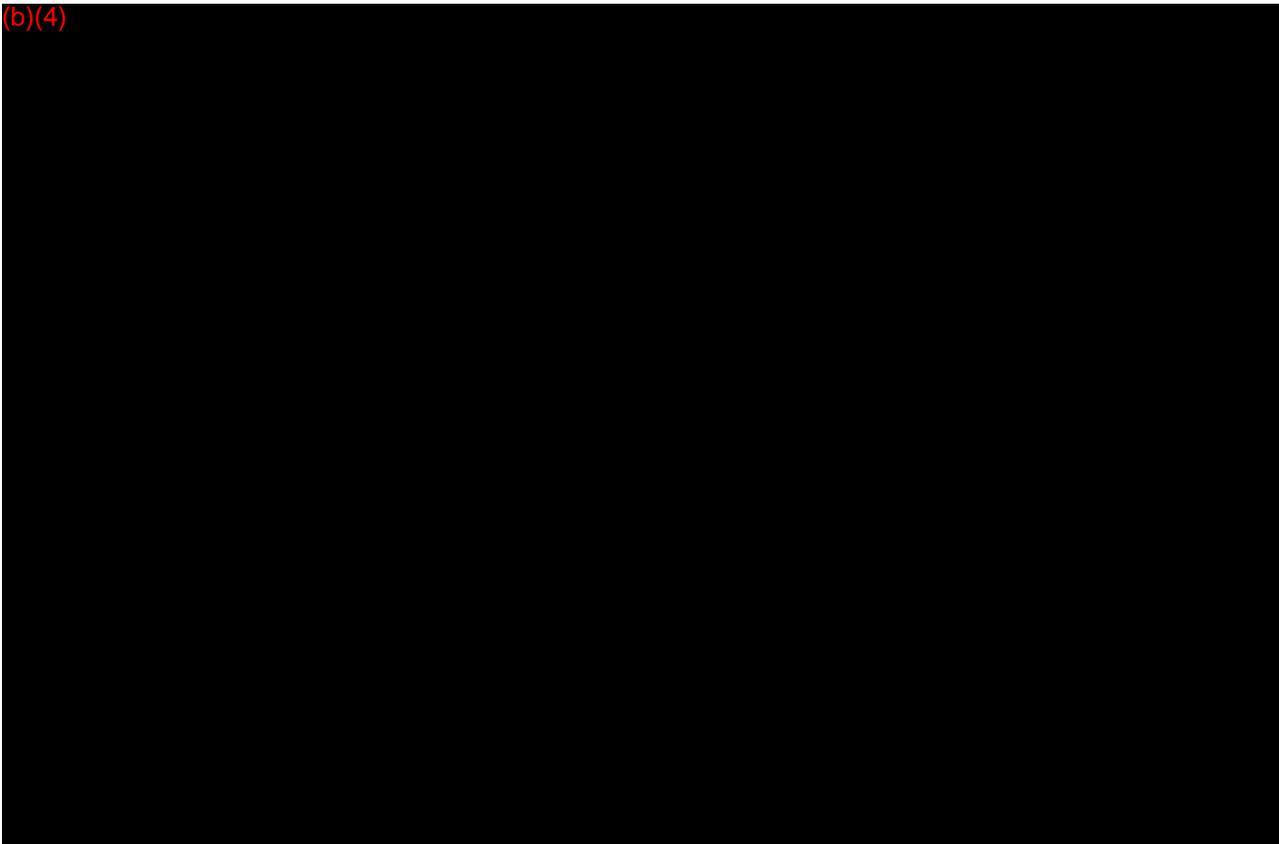
Vials containing LC Bead are packaged in a cardboard box. There is no sterile barrier between the box and the outside surface of the vial. Package labeling is provided in section 7.0 of this pre-market notification.

#### **5.5.3.2 External Packaging for Syringes**

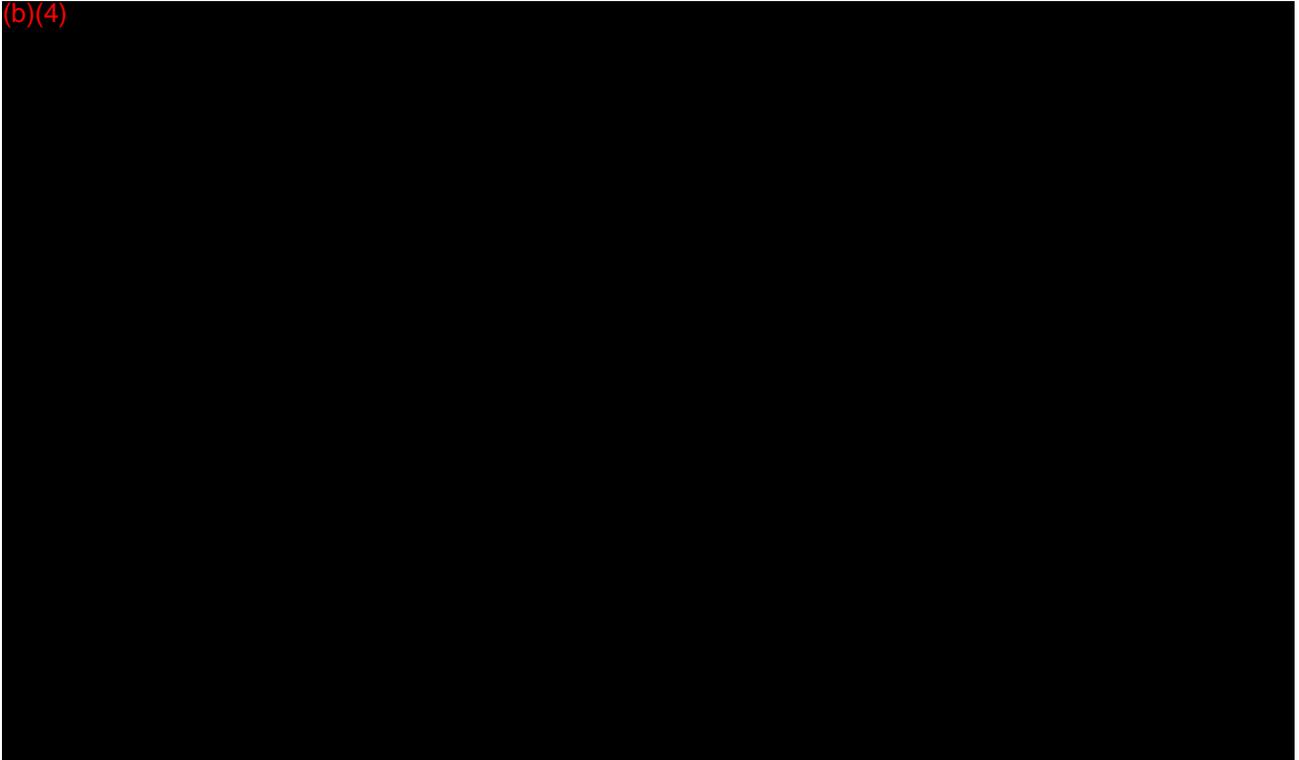
Syringes containing Bead Block™ are packaged in a molded polycarbonate tray with Tyvek® lid stock. The syringe and contents are sterile. The Tyvek® lid stock serves as a sterile barrier. Package labeling is provided in section 7.0 of this pre-market notification.

### **5.6 Device Interfaces**

(b)(4)



(b)(4)



## 6 Device Modifications & Comparative Information

### 6.1 Predicate Devices

#### 510(k) Numbers and Product Codes of Equivalent Devices

BioCure, Inc,  
GelSpheres Microspheres Embolic Agent  
510K Number: #K023089  
Product Code: HCG/KRD  
CFR Section: 882.5950

Biocompatibles, UK Ltd.,  
LC Bead Microspheres  
Bead Block™ Compressible Microspheres  
510K Number: #K033761  
Product Code: HCG/KRD  
CFR Section: 882.5950

Biocompatibles, UK Ltd.,  
LC Bead Microspheres

Bead Block™ Compressible Microspheres

510K Number: #K042231

Product Code: HCG

CFR Section: 882.5950

## **6.2 Discussion of Similarities and Differences between LC Bead and predicate devices**

### **6.2.1 Indications for Use**

LC Bead Microspheres Embolic Agent, and Bead Block™ have the same indications for use.

"..... Embolic Agent is intended for embolization of hypervascular tumors and arteriovenous malformations."

### **6.2.2 Target Population**

The clinical application of LC Bead Microspheres, Bead Block™ Compressible Microspheres and the predicate devices is the same, treatment of hypervascular tumors and arteriovenous malformations (AVM's). LC Bead/Bead Block and the predicate devices are intended to be delivered to selected sites through catheters with a diameter appropriate for the vascular target and the size of the emboli. Accurate placement of all of all embolic agents is assured through visualization of the embolization process using radiographic imaging. Both LC Bead, Bead Block™ and the predicate devices are mixed with a radio opaque contrast agent prior to injection to permit visualization. LC Bead, Bead Block™ and the predicate devices are available in a range of sizes to permit selection of the most appropriate size for target vessels. LC Bead, Bead Block™ and the predicate devices are intended for single use and are supplied sterile and non-Pyrogenic.

### **6.2.3 Product Labeling**

The Labeling for LC Bead and Bead Block™ is included in Section 7.0 of this pre-market notification. The Labeling is unchanged from K033761. Indications, warnings and contraindications for LC Bead/Bead Block™ is the same as for the predicate devices.

### **6.2.4 Packaging**

LC Bead and Bead Block™ are supplied in glass vials and syringes respectively, there

are no changes to package materials. The same packaging processes and equipment are used as the predicates.

#### **6.2.5 Technical Characteristics**

Technical characteristic and specifications are identical to the predicate devices.

#### **6.2.6 Physical Characteristics**

Physical and chemical characteristics are identical to the predicate devices.

##### **6.2.6.1 Catheter Delivery**

Catheter delivery performance is unchanged from K042231 and K033761

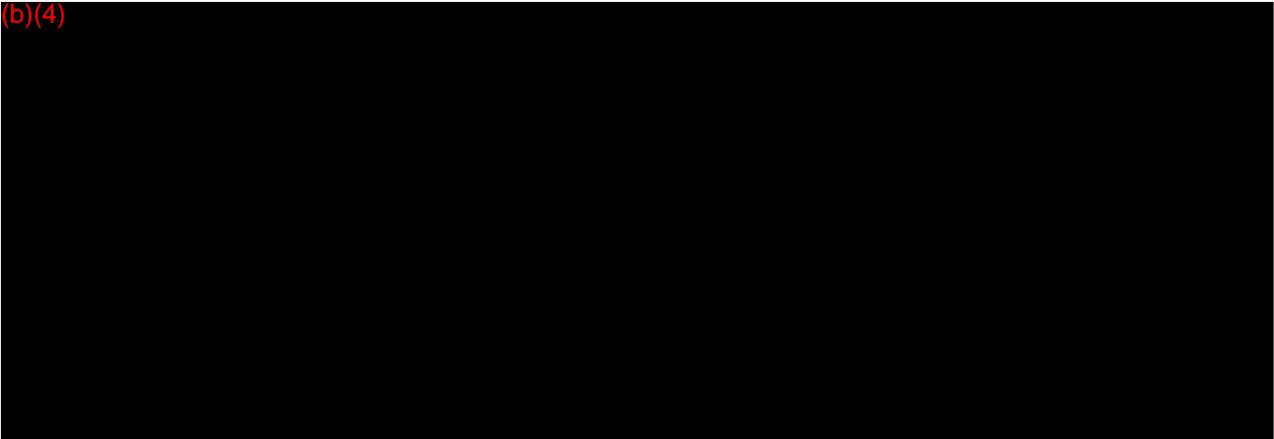
#### **6.2.7 Performance Testing**

FDA published Special controls for Neurological Embolization devices in February 2004. LC Bead and Bead Block™ compressible Microspheres conform to these requirements (see design controls – Section 8.0 and appendices with Validation data referenced to K042231, K023089 & K042231)

#### **6.2.8 Safety Characteristics**

The technical characteristics (physical characteristics, biocompatibility, sterility, endotoxin, etc) are the same for LC Bead and Bead Block™ with the predicate devices. No new characteristics are added with LC Bead or Bead Block™ which would have an effect on product safety, effectiveness or the ability of the product to meet the relevant standards or specifications as in K042231, K023098 and K033761.

(b)(4)



6.4 Comparison Table

	LC Bead Microspheres UB Series (New)	LC Bead Microspheres VE Series (New)	Bead Block™ Compressible Microspheres EB Series (New)	LC Bead Microspheres & Bead Block™ Compressible Microspheres UB Series (K042231)	GelSpheres Embolic Agent – V Series (K023089) (K033761) (K042231)	GelSpheres Embolic Agent – S Series (K023089) (K033761) (Bead Block) (K042231) (Bead Block)
Device Description	Calibrated microspheres for embolization Undyed	Calibrated microspheres for embolization Blue dyed	Calibrated microspheres for embolization Blue Dyed	Calibrated microspheres for embolization Undyed	Calibrated microspheres for embolization Blue Dyed	Calibrated microspheres for embolization Blue Dyed
Safety & Standards	<p>Guidance For Industry; 2004: FDA Guidance for Neurological Embolization Products</p> <p>ISO/EN 10993-1; 1997 Biological Evaluation of Medical Devices, Part I: Evaluation and Testing</p> <p>ISO/EN 10993-3; 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.</p> <p>ISO/EN 10993-4; 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood.</p> <p>ISO/EN 10993-5; 1993 Biological Evaluation of Medical Devices, Part 5: Tests for In Vitro Cytotoxicity</p> <p>ISO/EN 10993-6; 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.</p>	<p>Guidance For Industry; 2004: FDA Guidance for Neurological Embolization Products</p> <p>ISO/EN 10993-1; 1997 Biological Evaluation of Medical Devices, Part I: Evaluation and Testing</p> <p>ISO/EN 10993-3; 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.</p> <p>ISO/EN 10993-4; 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood.</p> <p>ISO/EN 10993-5; 1993 Biological Evaluation of Medical Devices, Part 5: Tests for In Vitro Cytotoxicity</p> <p>ISO/EN 10993-6; 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.</p>	<p>Guidance For Industry; 2004: FDA Guidance for Neurological Embolization Products</p> <p>ISO/EN 10993-1; 1997 Biological Evaluation of Medical Devices, Part I: Evaluation and Testing</p> <p>ISO/EN 10993-3; 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.</p> <p>ISO/EN 10993-4; 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood.</p> <p>ISO/EN 10993-5; 1993 Biological Evaluation of Medical Devices, Part 5: Tests for In Vitro Cytotoxicity</p> <p>ISO/EN 10993-6; 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.</p>	<p>Guidance For Industry; 2004: FDA Guidance for Neurological Embolization Products</p> <p>ISO/EN 10993-1; 1997 Biological Evaluation of Medical Devices, Part I: Evaluation and Testing</p> <p>ISO/EN 10993-3; 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.</p> <p>ISO/EN 10993-4; 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood.</p> <p>ISO/EN 10993-5; 1993 Biological Evaluation of Medical Devices, Part 5: Tests for In Vitro Cytotoxicity</p> <p>ISO/EN 10993-6; 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.</p>	<p>Guidance For Industry; 2000: FDA Guidance for Neurological Embolization Products</p> <p>ISO/EN 10993-1; 1997 Biological Evaluation of Medical Devices, Part I: Evaluation and Testing</p> <p>ISO/EN 10993-3; 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.</p> <p>ISO/EN 10993-4; 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood.</p> <p>ISO/EN 10993-5; 1993 Biological Evaluation of Medical Devices, Part 5: Tests for In Vitro Cytotoxicity</p> <p>ISO/EN 10993-6; 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.</p>	<p>Guidance For Industry; 2000: FDA Guidance for Neurological Embolization Products</p> <p>ISO/EN 10993-1; 1997 Biological Evaluation of Medical Devices, Part I: Evaluation and Testing</p> <p>ISO/EN 10993-3; 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.</p> <p>ISO/EN 10993-4; 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood.</p> <p>ISO/EN 10993-5; 1993 Biological Evaluation of Medical Devices, Part 5: Tests for In Vitro Cytotoxicity</p> <p>ISO/EN 10993-6; 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.</p>

	LC Bead Microspheres UB Series (New)	LC Bead Microspheres VE Series (New)	Bead Block™ Compressible Microspheres EB Series (New)	LC Bead Microspheres & Bead Block™ Compressible Microspheres UB Series (K042231)	GelSpheres Embolic Agent – V Series (K023089) (K033761) (K042231)	GelSpheres Embolic Agent – S Series (K023089) (K033761) (Bead Block) (K042231) (Bead Block)
	<p>ISO/EN 10993-10; 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.</p> <p>ISO/EN 10993-11; 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.</p> <p>ISO/EN 11607; 1997 – Packaging for terminally sterilized products.</p> <p>AAMI 11134; 1993 – Sterilization of Health Care Products – Requirements for validation and routine control – Industrial moist heat sterilization 2<sup>nd</sup> edition.</p> <p>ANSI/AAMI/ISO 14937; 2000 – Sterilization of Health Care Products – Characterization of a Sterilizing Agent and the Development, Validation and Routine Control of a Sterilization Process for Medical Devices.</p> <p>EN 554: Sterilization of Medical Devices – validation and Routine Control of Sterilization by Moist Heat</p>	<p>ISO/EN 10993-10; 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.</p> <p>ISO/EN 10993-11; 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.</p> <p>ISO/EN 11607; 1997 – Packaging for terminally sterilized products.</p> <p>AAMI 11134; 1993 – Sterilization of Health Care Products – Requirements for validation and routine control – Industrial moist heat sterilization 2<sup>nd</sup> edition.</p> <p>ANSI/AAMI/ISO 14937; 2000 – Sterilization of Health Care Products – Characterization of a Sterilizing Agent and the Development, Validation and Routine Control of a Sterilization Process for Medical Devices.</p> <p>EN 554: Sterilization of Medical Devices – validation and Routine Control of Sterilization by Moist Heat</p>	<p>ISO/EN 10993-10; 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.</p> <p>ISO/EN 10993-11; 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.</p> <p>ISO/EN 11607; 1997 – Packaging for terminally sterilized products.</p> <p>AAMI 11134; 1993 – Sterilization of Health Care Products – Requirements for validation and routine control – Industrial moist heat sterilization 2<sup>nd</sup> edition.</p> <p>ANSI/AAMI/ISO 14937; 2000 – Sterilization of Health Care Products – Characterization of a Sterilizing Agent and the Development, Validation and Routine Control of a Sterilization Process for Medical Devices.</p> <p>EN 554: Sterilization of Medical Devices – validation and Routine Control of Sterilization by Moist Heat</p>	<p>ISO/EN 10993-10; 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.</p> <p>ISO/EN 10993-11; 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.</p> <p>ISO/EN 11607; 1997 – Packaging for terminally sterilized products.</p> <p>AAMI 11134; 1993 – Sterilization of Health Care Products – Requirements for validation and routine control – Industrial moist heat sterilization 2<sup>nd</sup> edition.</p> <p>ANSI/AAMI/ISO 14937; 2000 – Sterilization of Health Care Products – Characterization of a Sterilizing Agent and the Development, Validation and Routine Control of a Sterilization Process for Medical Devices.</p> <p>EN 554: Sterilization of Medical Devices – validation and Routine Control of Sterilization by Moist Heat</p>	<p>ISO/EN 10993-10; 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.</p> <p>ISO/EN 10993-11; 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.</p> <p>ISO/EN 11607; 1997 – Packaging for terminally sterilized products.</p> <p>AAMI 11134; 1993 – Sterilization of Health Care Products – Requirements for validation and routine control – Industrial moist heat sterilization 2<sup>nd</sup> edition.</p> <p>ANSI/AAMI/ISO 14937; 2000 – Sterilization of Health Care Products – Characterization of a Sterilizing Agent and the Development, Validation and Routine Control of a Sterilization Process for Medical Devices.</p> <p>EN 554: Sterilization of Medical Devices – validation and Routine Control of Sterilization by Moist Heat</p>	<p>for In Vitro Cytotoxicity</p> <p>ISO/EN 10993-6; 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.</p> <p>ISO/EN 10993-10; 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.</p> <p>ISO/EN 10993-11; 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.</p> <p>AAMI 11134; 1993 – Sterilization of Health Care Products – Requirements for validation and routine control – Industrial moist heat sterilization 2<sup>nd</sup> edition.</p>

	LC Bead Microspheres UB Series (New)	LC Bead Microspheres VE Series (New)	Bead Block™ Compressible Microspheres EB Series (New)	LC Bead Microspheres & Bead Block™ Compressible Microspheres UB Series (K042231)	GelSpheres Embolic Agent – V Series (K023089) (K033761) (K042231)	GelSpheres Embolic Agent – S Series (K023089) (K033761) (Bead Block) (K042231) (Bead Block)
<b>Indications for Use</b>	"LC Bead and Bead Block™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."	"LC Bead and Bead Block™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."	"LC Bead and Bead Block™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."	"LC Bead and Bead Block™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."	"LC Bead and Bead Block™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."	"LC Bead and Bead Block™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."
<b>Expiration</b>	2 years	1 year				
<b>Size Range</b>	5 size ranges up to 1200µm					
<b>Sterility</b>	SAL 10 <sup>-6</sup> ; Steam					
<b>Packaging</b>	Vial, non sterile package	Vial, non sterile package	Syringe, sterile package	Vial, non sterile package	Vial, non sterile package	Syringe, sterile package
<b>Composition</b>	PVA, buffered Saline	PVA, Reactive Blue Dye #4, buffered Saline	PVA, Reactive Blue Dye #4, buffered Saline	PVA, buffered Saline	PVA, Reactive Blue Dye #4, buffered Saline	PVA, Reactive Blue Dye #4, buffered Saline
<b>USE</b>	Single Use Only					
<b>Delivery Method</b>	Intravascular catheter					

## 7 Labeling

The labeling for LC Bead Microspheres and Bead Block™ Compressible Microspheres labeling are updated to reflect proprietary name changes which were made to differentiate the different versions of the products.

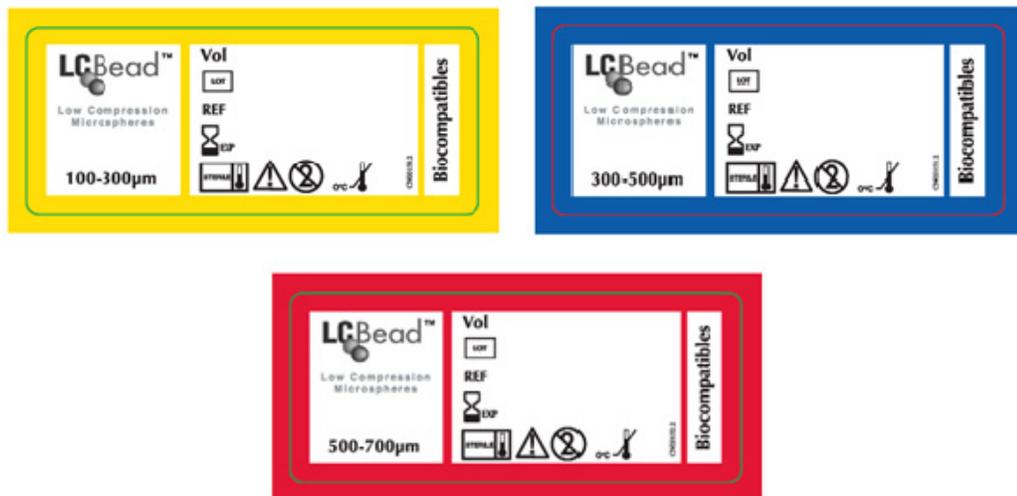
Other than cosmetic changes and model numbers there are no differences from the labeling provided in K042231 and K033761.

Sample labels for all versions of LC Bead and Bead Block are on the pages which follow.

### 7.1 Package Labels

#### 7.1.1 Labeling for LC Bead

##### Vial Label



Carton Label

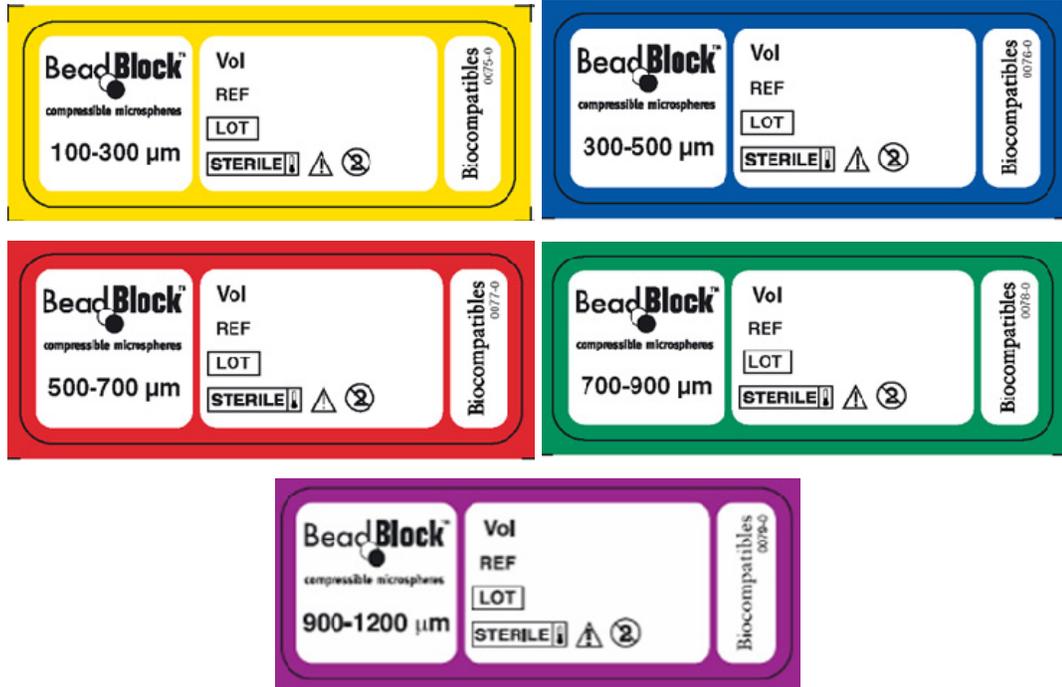


Patient Label

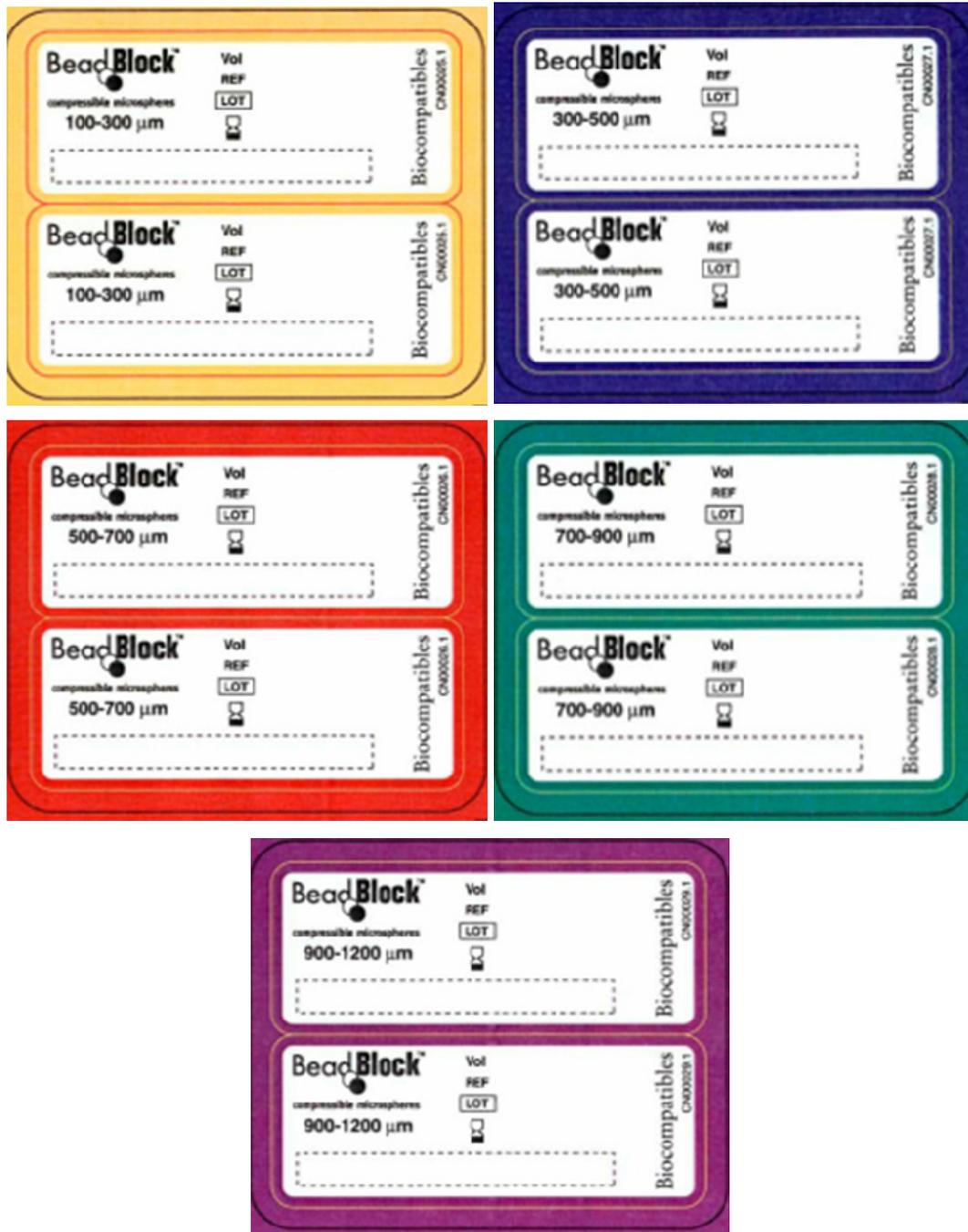


## 7.1.2 Labeling for Bead Block

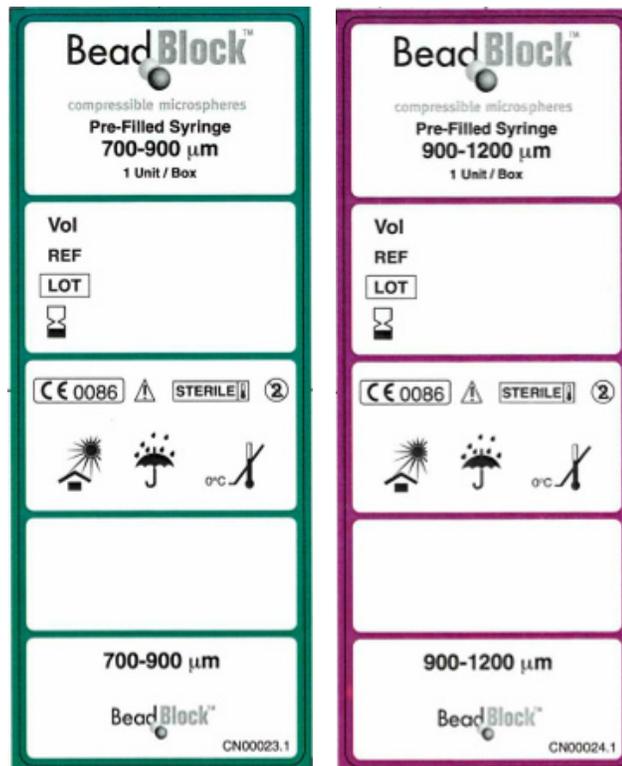
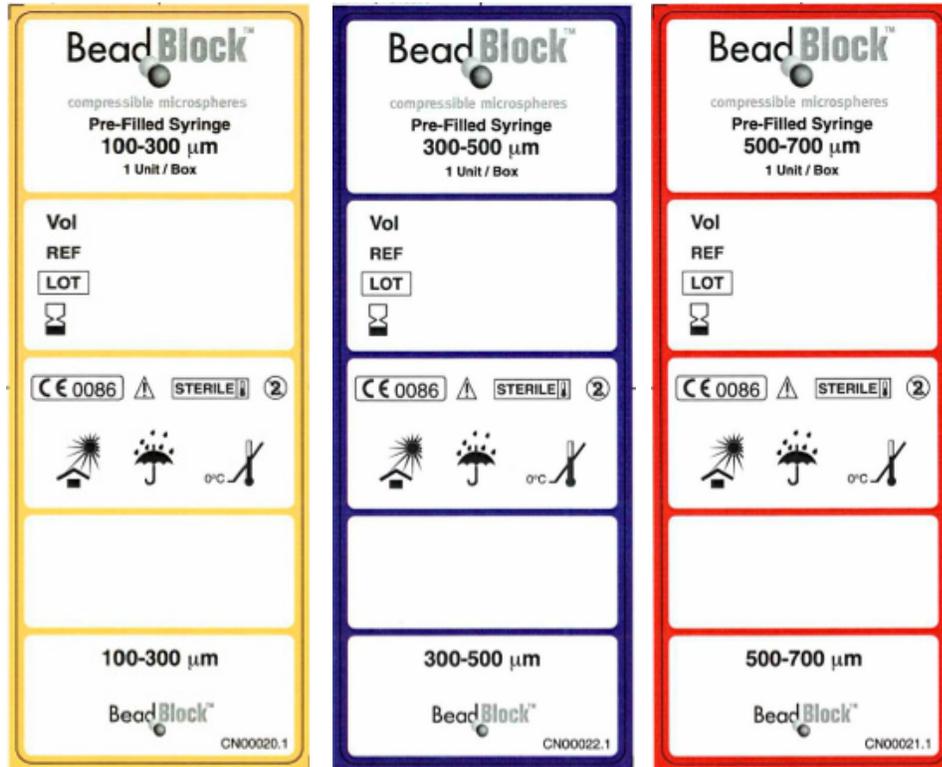
### Syringe Label



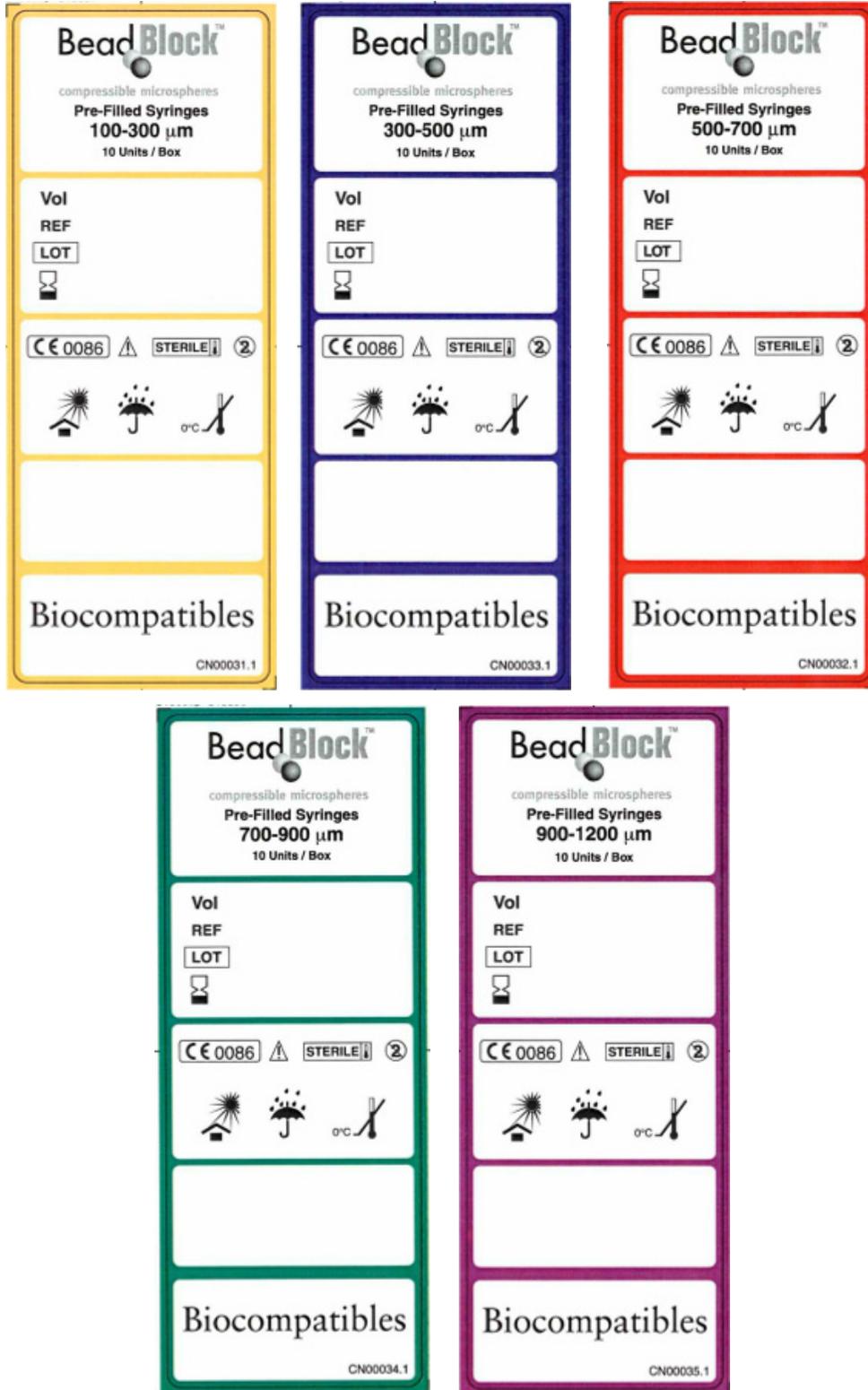
Patient Label



### Single Carton Label



10-Pack Label



## 7.2 Instructions For Use

### 7.2.1 IFU for LC Bead

#### English

#### LC Bead™ Embolic Agent

#### INSTRUCTIONS FOR USE

STERILE  
SINGLE USE ONLY  
NON-PYROGENIC

Sterilized by steam  
*Do not use if the package is opened or damaged*

#### DESCRIPTION:

LC Bead comprise a range of hydrogel microspheres that are biocompatible, hydrophilic, nonresorbable and precisely calibrated. LC Bead microspheres are produced from polyvinyl alcohol and are available in the following size ranges:

Size	Label Color
100 – 300 µm	Yellow
300 – 500 µm	Blue
500 – 700 µm	Red
700 – 900 µm	Green
900 – 1200 µm	Purple

#### PRESENTATION:

- Glass vial of 1.0ml
- Stopper sealed by an aluminum cap equipped with a colored cap
- Each vial contains approximately 1 ml or 2 ml of LC Bead in a non-pyrogenic sterile physiological buffered saline.
- Each vial is intended for single patient use only. Do not resterilise. Discard any unused material

#### INDICATIONS:

LC Bead microspheres are intended to be used for the embolisation of hypervascular tumours and arteriovenous malformations (AVMs).

#### CLENICAL APPLICATIONS:

The scientific literature provides extensive documentation of embolisation procedures using a wide variety of artificial agents in both neurological and peripheral vascular systems, including the head, neck, spine, liver, genitourinary tract, uterus, gastrointestinal system, limbs and lungs. A representative bibliography is provided following these instructions for use.

#### CONTRAINDICATIONS:

1. Patients intolerant to occlusion procedures.
2. Vascular anatomy or blood flow that precludes catheter placement or emboli injection.
3. Presence or likely onset of vasospasm.
4. Presence or likely onset of hemorrhage.
5. Presence of severe atherosclerotic disease.
6. Presence of feeding arteries smaller than distal branches from which they emerge.
7. Presence of patent extra- to intracranial anastomoses or shunts.
8. Presence of collateral vessel pathways potentially endangering normal territories during embolisation.
9. Presence of end arteries leading directly to cranial nerves.
10. Presence of arteries supplying the lesion not large enough to accept LC Bead microspheres.
11. Vascular resistance peripheral to the feeding arteries precluding passage of LC Bead microspheres into the lesion.
12. Do not use LC Bead microspheres in the following applications:
  - i. Embolisation of large diameter arteriovenous shunts (i.e. where the blood does not pass through the arterial/capillary/venous transition but directly from artery to vein).
  - ii. The pulmonary arterial vasculature.
  - iii. Any vasculature where the use of LC Bead Embolic Agent

could pass directly into the internal carotid artery or the above listed vessels.

**WARNING:** Studies have shown that LC Bead microspheres do not form aggregates and, as a result, penetrate deeper into the vasculature as compared to similarly sized PVA particles. Care must be taken to choose a larger sized LC Bead Embolic Agent when embolising arteriovenous malformations with large shunts to avoid passage of the microspheres into the pulmonary or coronary circulation.

The color of the LC Bead microspheres could be visible through the skin if injected into arteries feeding superficial tissues.

#### CAUTIONS:

- Do not use if the vial or packaging appear damaged.
- Sterile and single use product. Do not reuse.
- Select the size and quantity of LC Bead microspheres appropriate for the pathology to be treated.
- Embolisation with LC Bead microspheres should only be performed by physicians who have received appropriate interventional occlusion training in the region intended to be embolised.

#### CAUTION:

Federal (USA) law restricts this device to sale by or on order of a physician.

#### POTENTIAL COMPLICATIONS:

1. Undesirable reflux or passage of LC Bead microspheres into normal arteries adjacent to the targeted lesion or through the lesion into other arteries or arterial beds, such as the internal carotid artery, pulmonary, or coronary circulations.
2. Pulmonary embolisation.
3. Ischemia at an undesirable location.
4. Capillary bed saturation and tissue damage.
5. Ischaemic stroke or Ischaemic infarction.
6. Vessel or lesion rupture and hemorrhage.
7. Neurological deficits including cranial nerve palsies.
8. Vasospasm.
9. Death.
10. Recanalisation.
11. Foreign body reactions necessitating medical intervention.
12. Infection necessitating medical intervention.
13. Clot formation at the tip of the catheter and subsequent dislodgement.

#### CONSERVATION AND STORAGE:

- LC Bead microspheres must be stored in a cool, dry and dark place in its original packaging.
- Use by the date indicated on the vial label.
- Do not freeze.

#### INSTRUCTIONS FOR USE:

- Carefully evaluate the vascular network associated with the lesion using high resolution imaging prior to beginning the embolisation procedure.
- LC Bead microspheres are available in a range of sizes. Care should be taken to choose the appropriate size LC Bead microspheres that best matches the pathology (i.e. vascular target/vessel size) and provides the desired clinical outcome.
- When embolising arteriovenous malformations, choose a particle size that will occlude the nidus without passing through the AVM.
- Choose a delivery catheter based on the size of the target vessel. LC Bead microspheres can tolerate temporary compression of 20% to 30% in order to facilitate passage through the delivery catheter.
- Introduce the delivery catheter into the target vessel according to standard techniques. Position the catheter tip as close as possible to the treatment site to avoid inadvertent occlusion of normal vessels.

CN00165.1

- LC Bead microspheres are not radio-opaque. It is recommended to monitor the embolisation under fluoroscopic visualization by adding the desired amount of contrast medium to the physiologic suspension fluid.

To deliver LC Bead microspheres.

- After shaking the bottle containing the LC Bead, dilute them with contrast medium either in a metallic/stainless steel cup or directly in the vial. Take care to ensure proper suspension of the microspheres in the contrast medium to enhance distribution during injection. Draw the LC Bead into a syringe needle of a size greater than or equal to 19 gauge (1.07 mm). Slowly inject LC Bead into the delivery catheter under fluoroscopic visualization while observing the contrast flow rate. If there is no effect on the flow rate, choose a larger microsphere size and repeat the delivery process. Exercise conservative judgment in determining the embolization endpoint.
- Upon completion of the treatment, remove the catheter while maintaining gentle suction so as not to dislodge LC Bead microspheres still within the catheter lumen.
- Discard any open, unused LC Bead in the Vial.

PACKAGE LABEL:

<b>REF</b>	Catalogue number
<b>LOT</b>	Batch number/Lot number
	Do not reuse
	Attention see instructions for use
	Steam Sterilized
	Use before/Expiry
	Protect from light
	Protect from moisture
	Do not freeze

REFERENCES:

1. Abuja A, Gibbons K. Endovascular therapy of central nervous system tumours. *Neuroradiol Clin of N Am*, 5(3): 541-554, 1994.
2. Agari JA, Carrasco CH, Wallace S: Neuroendocrine tumours metastatic to the liver: Vascular occlusion therapy. *Ann NY Acad Sci* 733: 479-487, Sep 1994.
3. Beusjeux R, Laurent A, Wassef M et al. Trisacryl gelatin microspheres for therapeutic embolization. II. Preliminary clinical evaluation in tumours and arteriovenous malformations. *AJNR*, 17: 541-548, March 1996.
4. Bendzus M, Klein R, Burger R, et al. Efficacy of trisacryl gelatin microspheres and polyvinylalcohol (PVA) particles in the preoperative embolization of meningiomas Presented at the ASNR 36<sup>th</sup> Annual Meeting, May 17-21, 1998.
5. Chamangajew C, Wallace S: Transcatheter regional therapy of extremity tumours. In: *Peripheral Vascular Intervention*.

6. Clouse ME: Hepatic artery embolization for bleeding and tumours. *Surg Clin N Am*, 69(2): 419-432, Apr 1989.
7. Dordyn C, Graves W, Salamat M, Rappe A: Collagen-coated acrylic microspheres for embolotherapy. In vivo and in vitro characteristics. *AJNR*, 19: 647-652, April 1997.
8. Dewkeis J: endovascular therapy of intracranial arteriovenous malformations: materials and techniques. *Neuroimaging Clin of N Am*, 8(2):401-424, 1998.
9. Encaracion CE, Kadir S, Beam CA, Payne CB: Gastrointestinal bleeding: Treatment with gastrointestinal arterial embolization. *Radiol*, 183(2):505-508, May 1992.
10. Frizel KT, Fisher WS: Cure, morbidity and mortality associated with embolization of brain arteriovenous malformations: A review of 1246 patients in 32 series over a 35-year period. *Neurosurg*, 37(6): 1031-1040, Dec 1995.
11. Laurent A, Beusjeux R, Wassef M, et al: Trisacryl gelatin microspheres for therapeutic embolization. I. Development and in vitro evaluation. *AJNR* 17:533-540, March 1996.
12. Rose SC: Transcatheter occlusion of injured extremity and pelvic arteries. In: *Peripheral Vascular Intervention*.
13. Bendzus M, Klein R, Burger R, et al. Efficacy of trisacryl gelatin microspheres versus polyvinyl alcohol particles in the preoperative embolization of meningiomas. *AJNR*, 21(2):255-261, Feb 2000.

Patents

- US 5,583,163
  - US 6,652,883
  - US 6,676,971
- Other patents pending

Manufactured by:  
**Biocompatibles UK Limited**  
 Chapman House  
 Farnham Business Park  
 Weydon Lane  
 Farnham  
 Surrey GU9 8QL  
 United Kingdom

Tel: +44 (0)1252 732 732  
 Fax: +44 (0)1252 732 777  
<http://www.biocompatibles.com>

CN00165.1

## 7.2.2 IFU for Bead Block

### English

STERILE - SINGLE USE ONLY - NON-PYROGENIC  
Sterilised by steam  
Do not use if the package is opened or damaged

#### DESCRIPTION:

Bead Block comprises a range of hydrogel microspheres that are biocompatible, hydrophilic, nonabsorbable and precisely calibrated. Bead Block microspheres are produced from polyvinyl alcohol and are available in the following size ranges:

Size	Label Colour
100 – 300 µm	Yellow
300 – 500 µm	Blue
500 – 700 µm	Red
700 – 900 µm	Green
900 – 1200 µm	Purple

#### PRESENTATION:

##### Syringe

- Syringe of 20 ml.
- Syringe is presented in a sterile, sealed pre-formed Tyvek® peel-away tray with a label coloured to denote the specific size range.
- Each syringe contains approximately 1 ml or 2 ml of Bead Block microspheres in non-pyrogenic, sterile, physiological buffered saline. Total volume of saline and Bead Block microspheres is approximately 5 ml.
- Each syringe is intended for single patient use only. Do not resterilise. Discard any unused material.

#### INDICATIONS:

Bead Block microspheres are intended to be used for the embolisation of hypervascular tumours and arteriovenous malformations (AVMs).

#### CLINICAL APPLICATIONS:

The scientific literature provides extensive documentation of embolisation procedures using a wide variety of artificial agents in both neurological and peripheral vascular systems, including the head, neck, spine, liver, genitourinary tract, uterus, gastrointestinal system, limbs and lungs. A representative bibliography is provided following these instructions for use.

#### CONTRAINDICATIONS:

1. Patients intolerant to occlusion procedures.
2. Vascular anatomy or blood flow that precludes catheter placement or emboli injection.
3. Presence or likely onset of vasospasm.
4. Presence or likely onset of haemorrhage.
5. Presence of severe atherosclerotic disease.
6. Presence of feeding arteries smaller than distal branches from which they emerge.
7. Presence of patent extra-to-intracranial anastomoses or shunts.
8. Presence of collateral vessel pathways potentially endangering normal territories during embolisation.
9. Presence of end arteries leading directly to cranial nerves.
10. Presence of arteries supplying the lesion not large enough to accept Bead Block microspheres.
11. Vascular resistance peripheral to the feeding arteries precluding passage of Bead Block microspheres into the lesion.
12. Do not use Bead Block microspheres in the following applications:
  - i. Embolisation of large diameter arteriovenous shunts (ie. where the blood does not pass through the arterial/capillary/venous transition but directly from artery to vein).
  - ii. The pulmonary arterial vasculature.
  - iii. Any vasculature where the use of Bead Block Embolic Agent could

pass directly into the internal carotid artery or the above listed vessels.

**WARNING:** Studies have shown that Bead Block microspheres do not form aggregates and, as a result, penetrate deeper into the vasculature as compared to similarly sized PVA particles. Care must be taken to choose a larger sized Bead Block Embolic Agent when embolising arteriovenous malformations with large shunts to avoid passage of the microspheres into the pulmonary or coronary circulation.

The colour of the Bead Block microspheres could be visible through the skin if injected into arteries feeding superficial tissues.

#### CAUTIONS:

- Do not use if the syringe or packaging appear damaged.
- Sterile and single use product. Do not reuse.
- Select the size and quantity of Bead Block microspheres appropriate for the pathology to be treated.
- Embolisation with Bead Block microspheres should only be performed by physicians who have received appropriate interventional occlusion training in the region intended to be embolised.

#### CAUTION:

Federal (USA) law restricts this device to sale by or on order of a physician.

#### POTENTIAL COMPLICATIONS:

1. Undesirable reflux or passage of Bead Block microspheres into normal arteries adjacent to the targeted lesion or through the lesion into other arteries or arterial beds, such as the internal carotid artery, pulmonary, or coronary circulations.
2. Pulmonary embolisation.
3. Ischaemia at an undesirable location.
4. Capillary bed saturation and tissue damage.
5. Ischaemic stroke or ischaemic infarction.
6. Vessel or lesion rupture and haemorrhage.
7. Neurological deficits including cranial nerve palsies.
8. Vasospasm.
9. Death.
10. Recanalisation.
11. Foreign body reactions necessitating medical intervention.
12. Infection necessitating medical intervention.
13. Clot formation at the tip of the catheter and subsequent dislodgement.

#### CONSERVATION AND STORAGE:

- Bead Block microspheres must be stored in a cool, dry and dark place in its original packaging.
- Use by the date indicated on the syringe label.
- Do not freeze.

#### INSTRUCTIONS FOR USE:

- Carefully evaluate the vascular network associated with the lesion using high resolution imaging prior to beginning the embolisation procedure.
- Bead Block microspheres are available in a range of sizes. Care should be taken to choose the appropriate size Bead Block microspheres that best matches the pathology (ie. vascular target/vessel size) and provides the desired clinical outcome.
- When embolising arteriovenous malformations, choose a particle size that will occlude the nidus without passing through the AVM.
- Choose a delivery catheter based on the size of the target vessel. Bead

Block microspheres can tolerate temporary compression of 20% to 30% in order to facilitate passage through the delivery catheter.

- Introduce the delivery catheter into the target vessel according to standard techniques. Position the catheter tip as close as possible to the treatment site to avoid inadvertent occlusion of normal vessels.
- Bead Block microspheres are not radio-opaque. It is recommended to monitor the embolisation under fluoroscopic visualisation by adding the desired amount of contrast medium to the physiologic suspension fluid.

**TO DELIVER BEAD BLOCK MICROSPHERES.**

**Pre-Filled Syringe:**

- o Directly aspirate 5 ml of contrast medium into the syringe to obtain an approximate 50% contrast and approximate 50% saline solution mix. Remove all air from the syringe. To evenly suspend the Bead Block microspheres/contrast solution gently invert the 20 ml syringe several times. Attach the 20 ml syringe to one port of the luer-lock 3-way stopcock; and, if desired, a delivery catheter may be attached to the remaining port on the stopcock. Wait several minutes to allow the Bead Block microspheres to suspend properly. Draw the Bead Block microspheres/contrast solution into the injection syringe slowly and gently to minimize the potential of introducing air into the system. Purge all air from the system prior to injection. Inject the Bead Block microspheres/contrast solution from the injection syringe under fluoroscopic visualization using a slow pulsatile action, while observing the contrast flow rate. If there is no effect on the flow rate, repeat the delivery process with additional injections of Bead Block microspheres/contrast solution or larger sized Bead Block microspheres may be considered. If the Bead Block microspheres/contrast solution requires re-suspension, gently invert the 20 ml syringe several times. Exercise conservative judgement in determining the embolisation endpoint.
- Upon completion of the treatment, remove the catheter while maintaining gentle suction so as not to dislodge Bead Block microspheres still within the catheter lumen.
- Discard any open, unused Bead Block microspheres in the Pre-Filled Syringe.

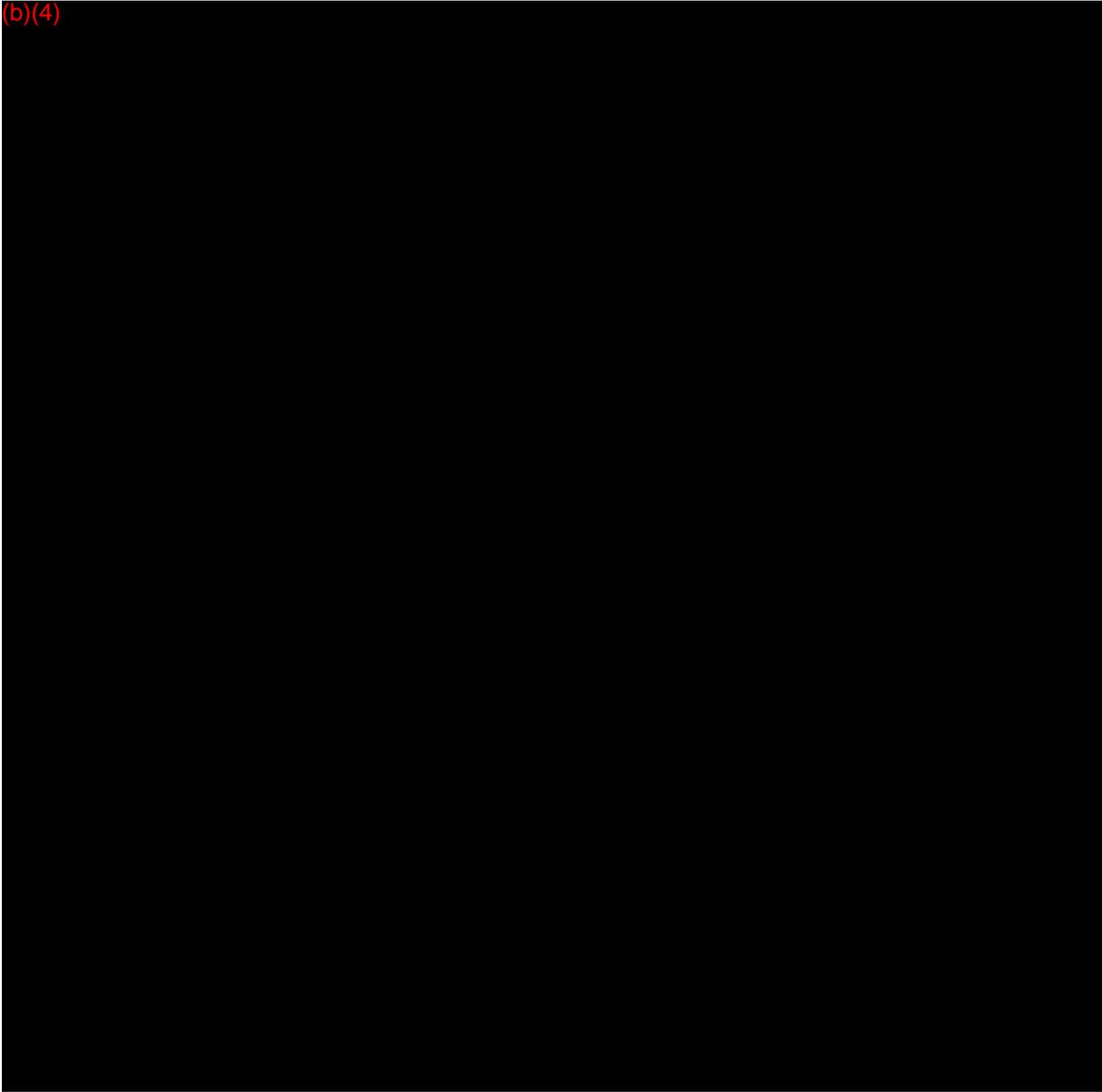
**PACKAGE LABEL:**

<b>REF</b> = Catalogue number	 = Use before/Expiry
<b>LOT</b> = Batch number/Lot number	 = Protect from light
 = Do not reuse	 = Protect from moisture
 = Attention see instructions for use	 = Do not freeze
 = Steam Sterilized	

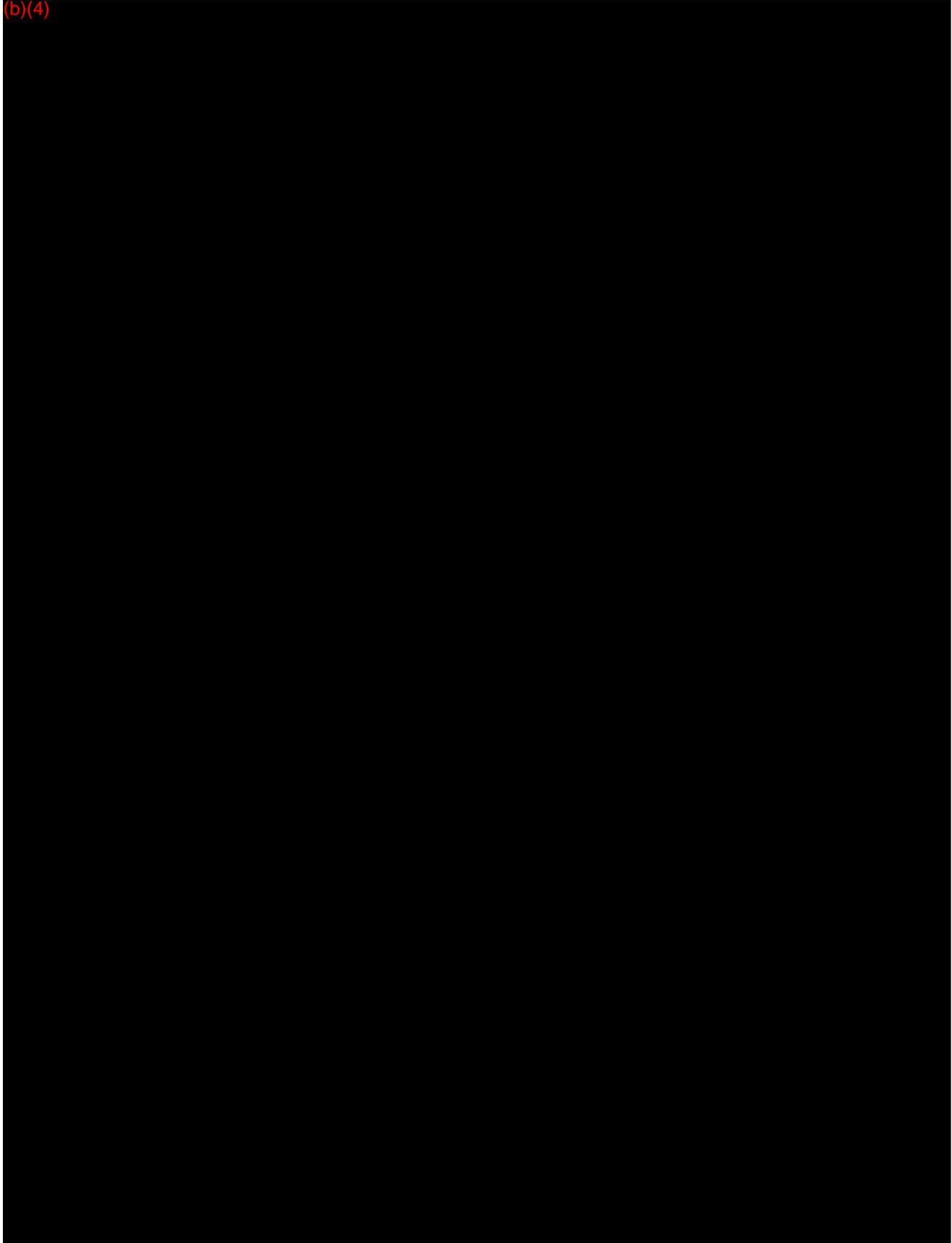
**REFERENCES:**

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2. Ajani JA, Carrasco CH, Wallace S: Neuroendocrine tumours metastatic to the liver: Vascular occlusion therapy. *Ann NY Acad Sci*, 733: 476-487, Sep 1994.
3. Beaujeux R, Laurent A, Wassef M et al: Trisacryl gelatin microspheres for therapeutic embolization, II: Preliminary clinical evaluation in tumours and arteriovenous malformations. *AJNR*, 17: 541-548, March 1996.
4. Bendszus M, Klein R, Burger I, et al: Efficacy of trisacryl gelatin microspheres and polyvinylalcohol (PVA) particles in the preoperative embolization of meningiomas. Presented at the ASNR 16th Annual Meeting, May 17-21, 1998.
5. Chamsanganaj C, Wallace S: Transcatheter regional therapy of extremity tumours. In: *Peripheral Vascular Intervention*.
6. Clouse ME: Hepatic artery embolisation for bleeding and tumours. *Surg Clin N Am*, 69(2): 419-432, Apr 1989.
7. Derleyn C, Graves V, Salamat M, Rappe A: Collagen-coated acrylic microspheres for embolotherapy: In vivo and in vitro characteristics. *AJNR*, 18:647-653, April 1997.
8. Deveikis JP: endovascular therapy of intracranial arteriovenous malformations: materials and techniques. *Neuroimaging Clin of N Am*, 8(2):401-424, 1998.
9. Encarnacion CE, Kadri S, Bean CA, Payne CS: Gastrointestinal bleeding: Treatment with gastrointestinal arterial embolization. *Radiol*, 183(2):505-508, Mar 1992.
10. Frizel RT, Fisher WS: Cure, morbidity and mortality associated with embolization of brain arteriovenous malformations: A review of 1246 patients in 32 series over a 35-year period. *Neurosurg*, 37(6): 1031-1040, Dec 1995.
11. Laurent A, Beaujeux R, Wassef M, et al: Trisacryl gelatin microspheres for therapeutic embolization, I: Development and in vitro evaluation. *AJNR* 17:533-540, March 1996.
12. Rose SC: Transcatheter occlusion of injured extremity and pelvic arteries. In: *Peripheral Vascular Intervention*.
13. Bendszus M, Klein R, Burger I, et al: Efficacy of trisacryl gelatin microspheres versus polyvinyl alcohol particles in the preoperative embolization of meningiomas. *AJNR*, 21(2):255-261, Feb 2000.

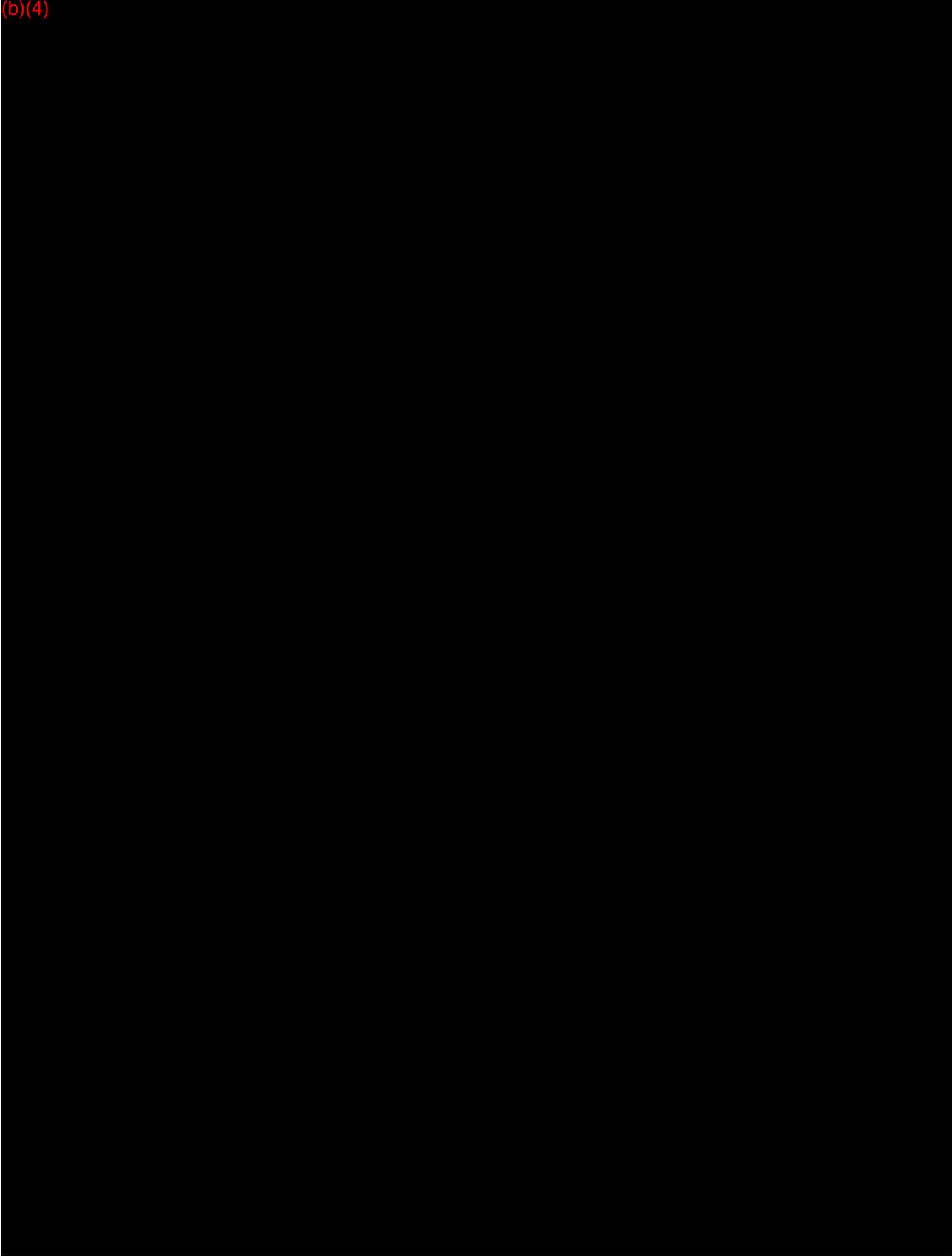
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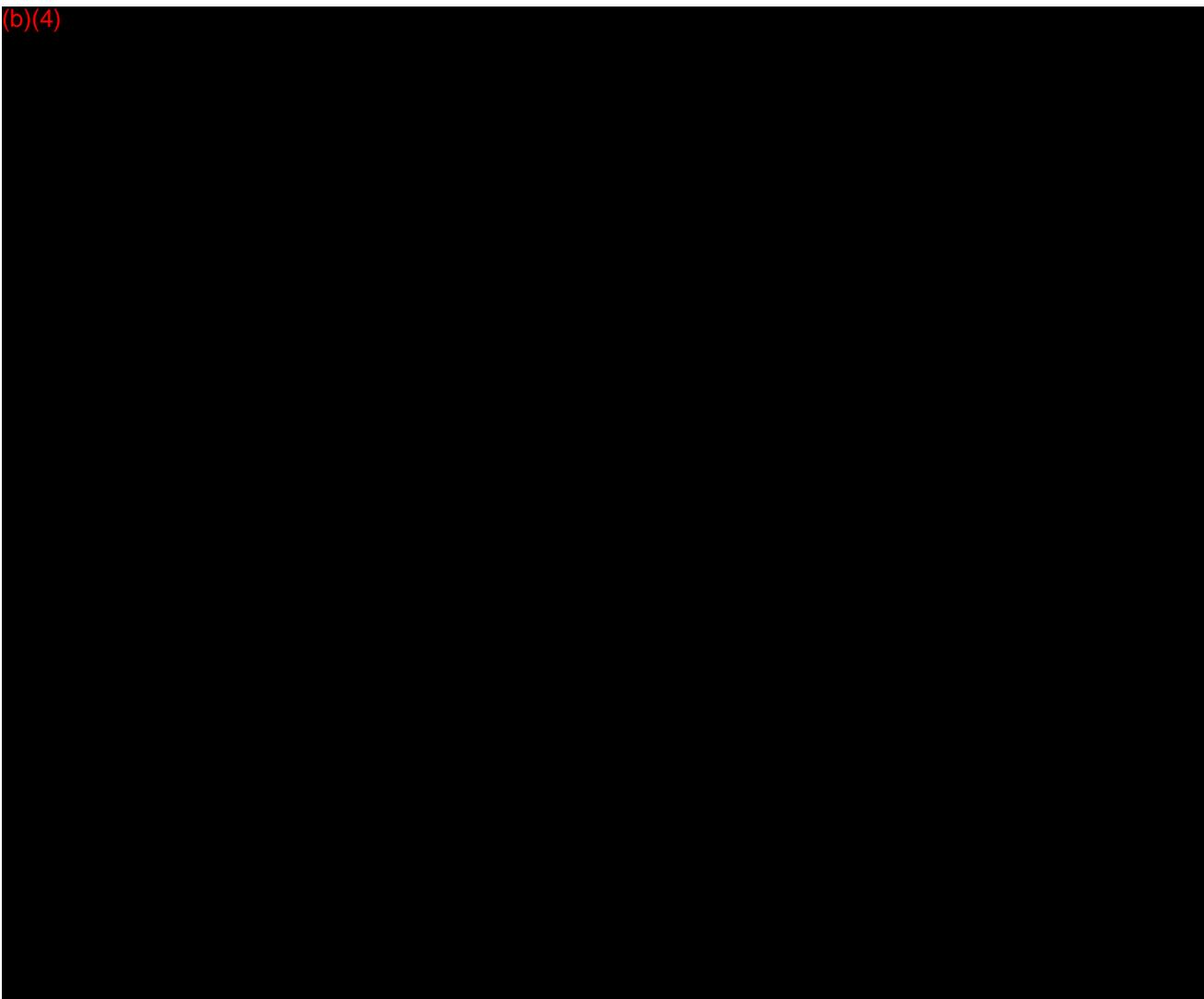
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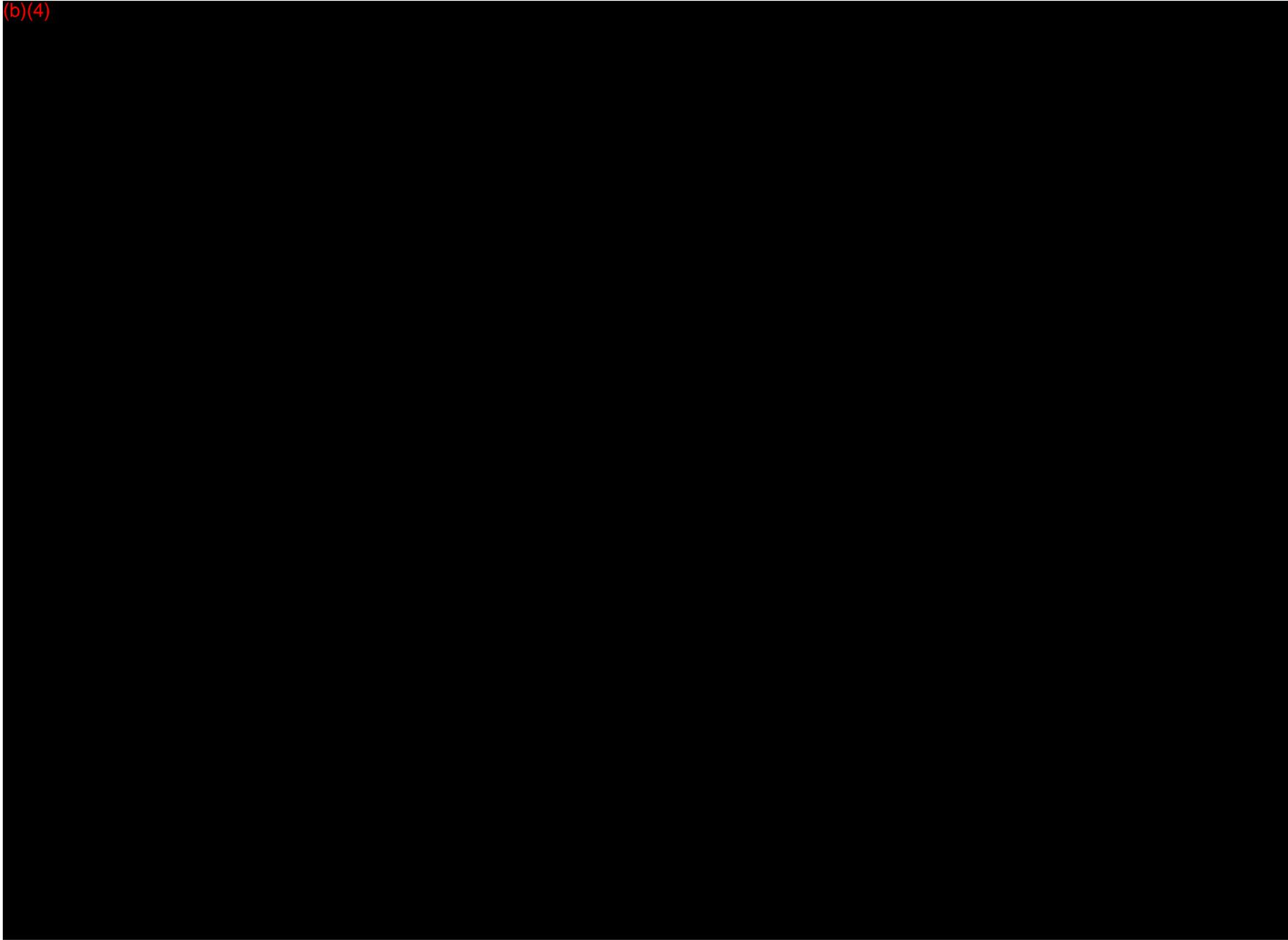
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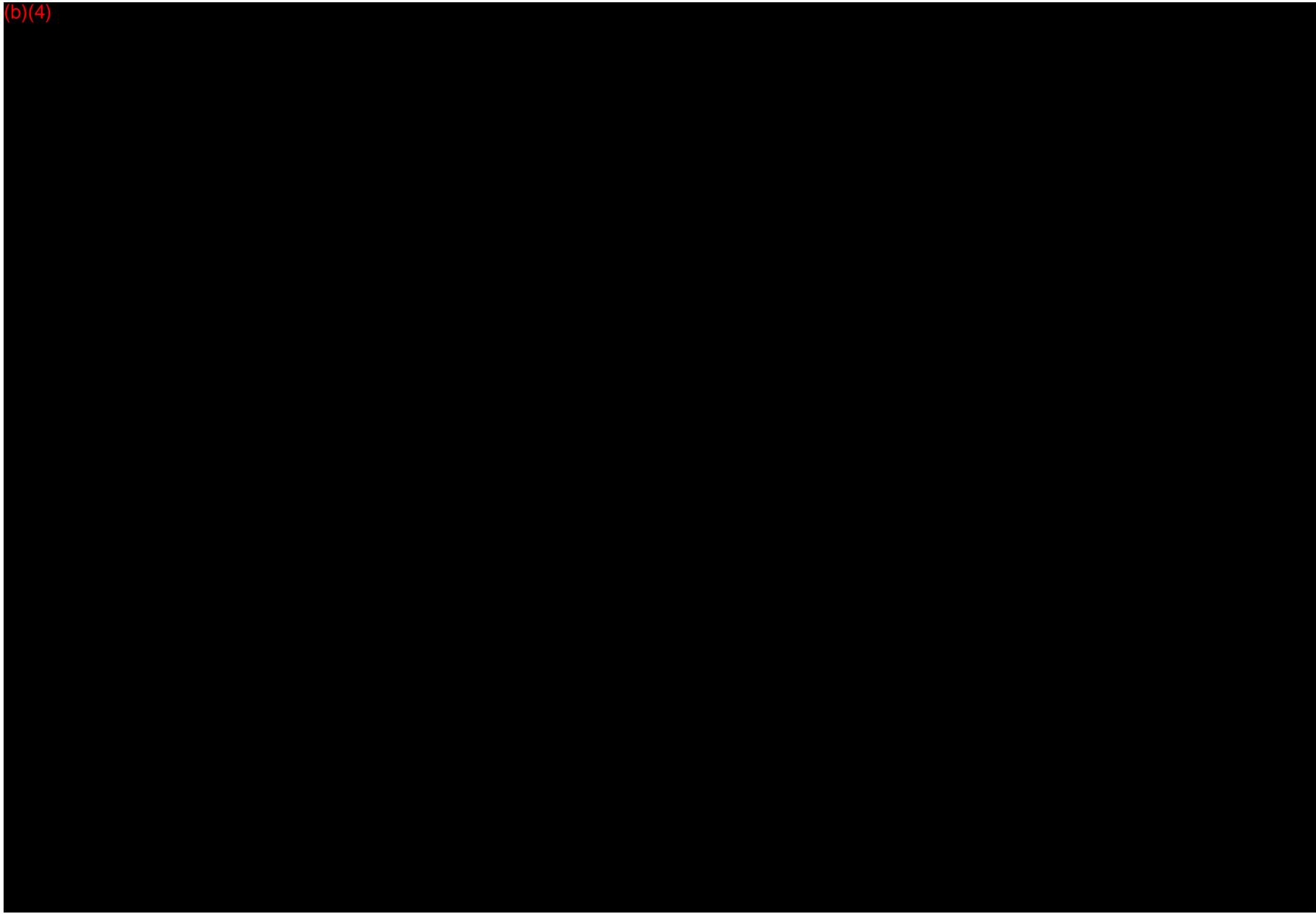
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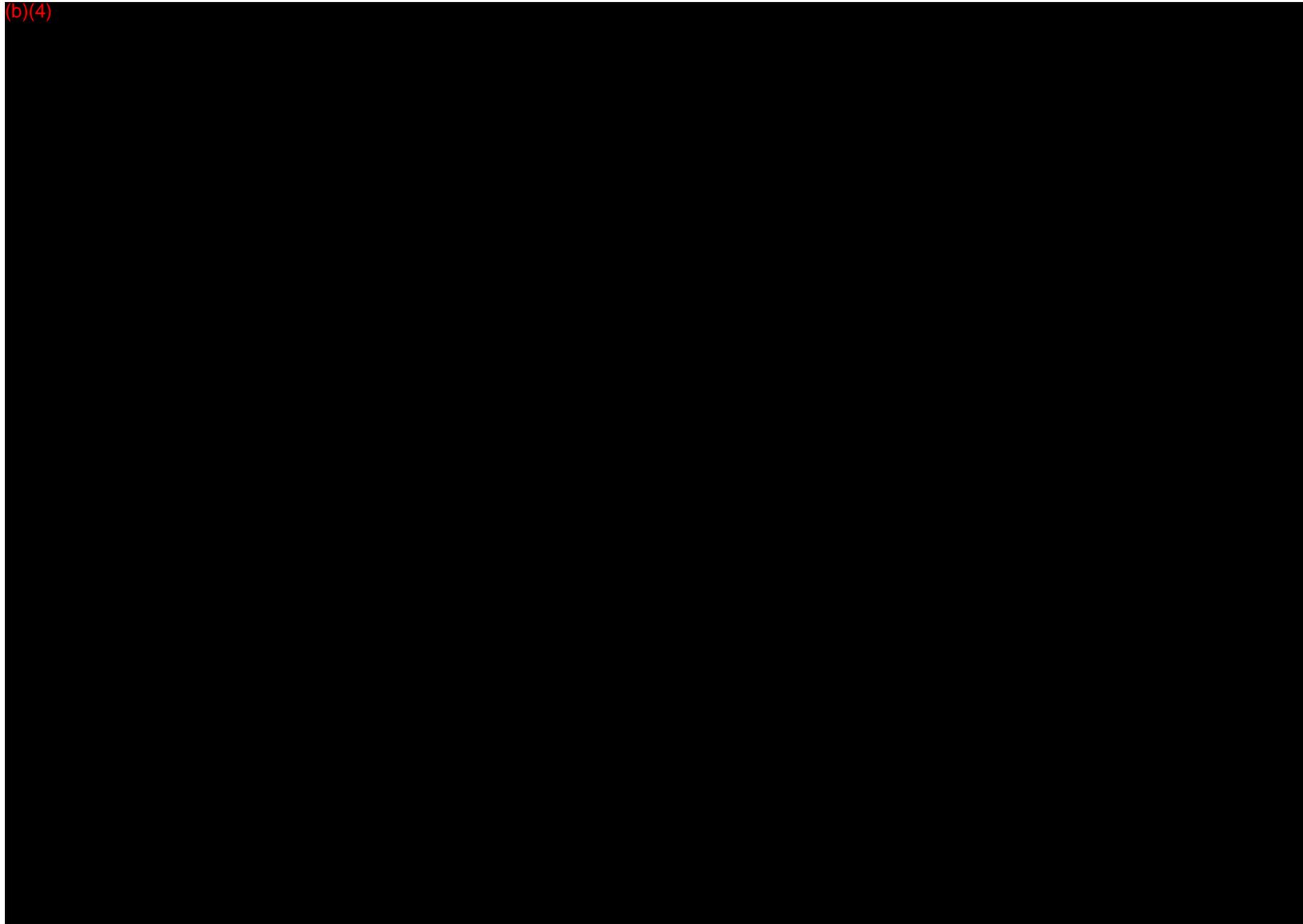
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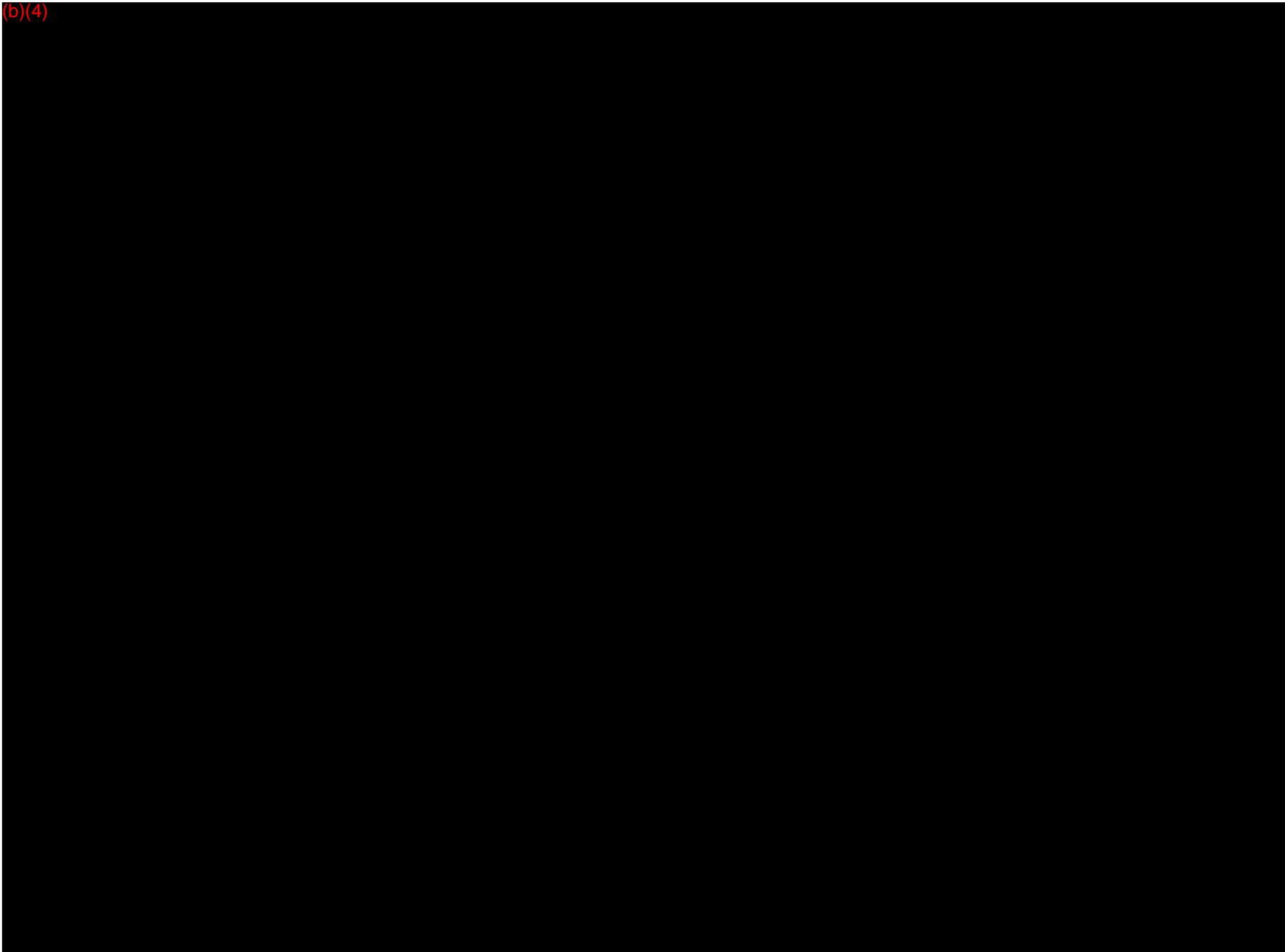
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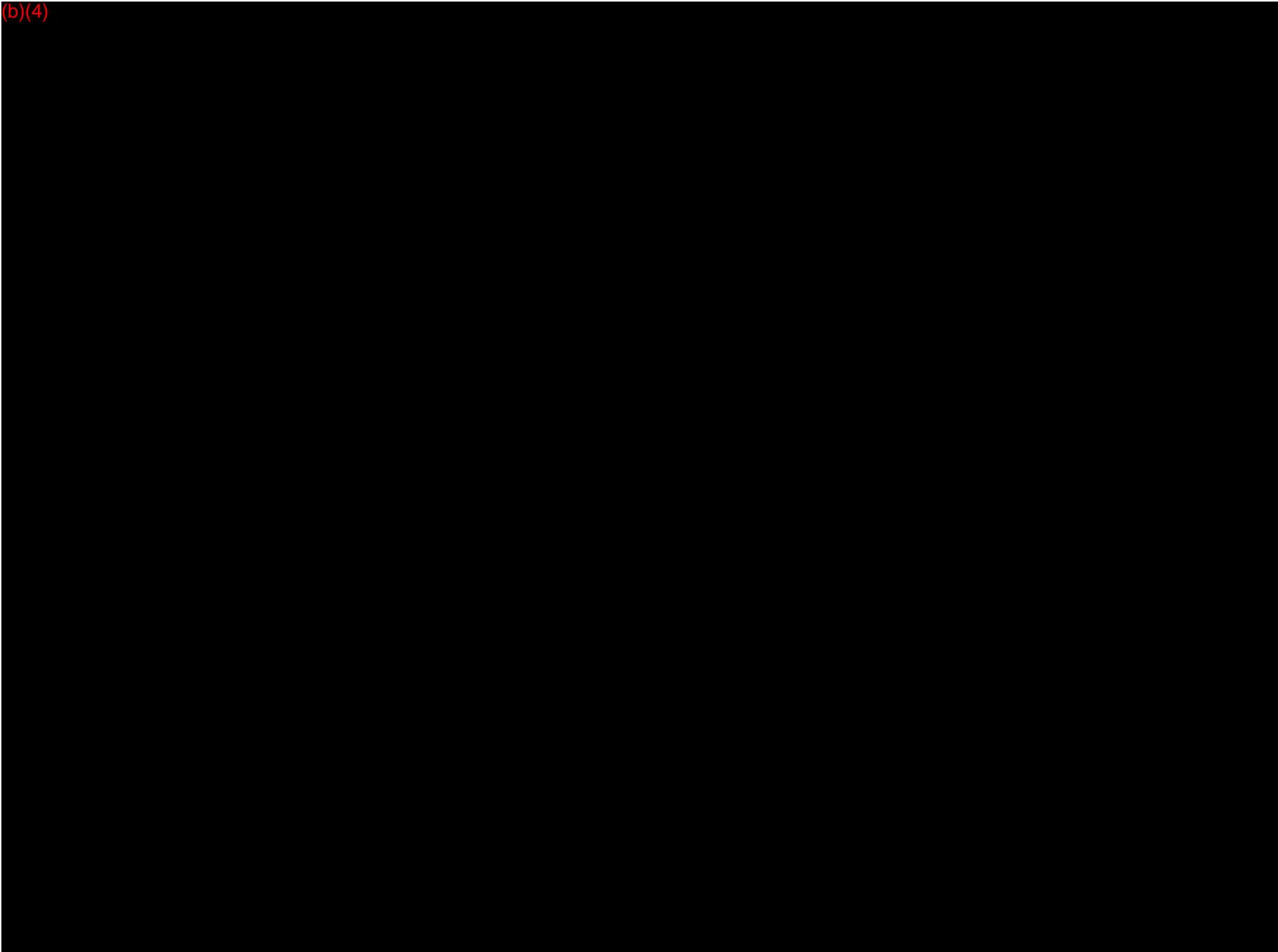
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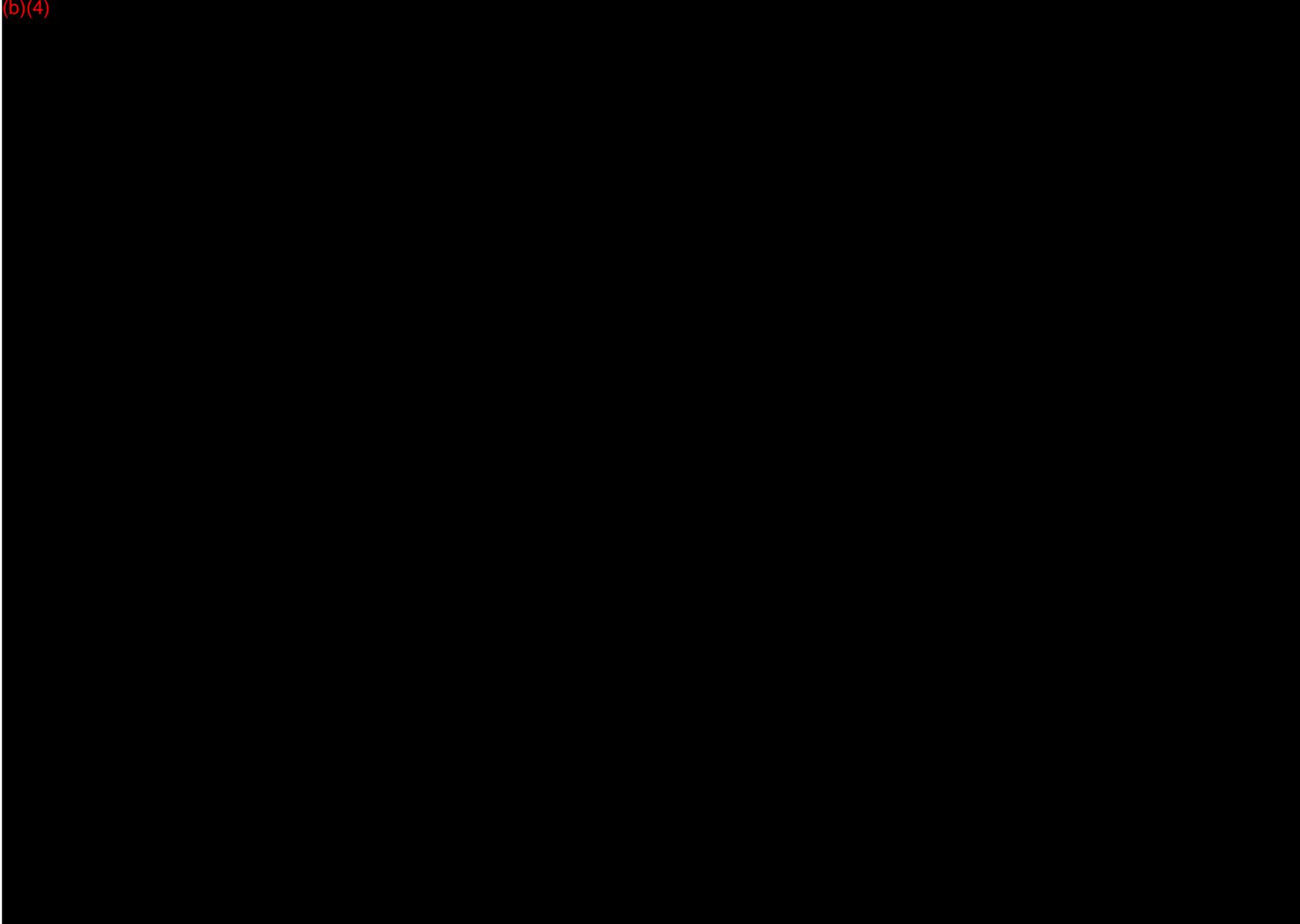
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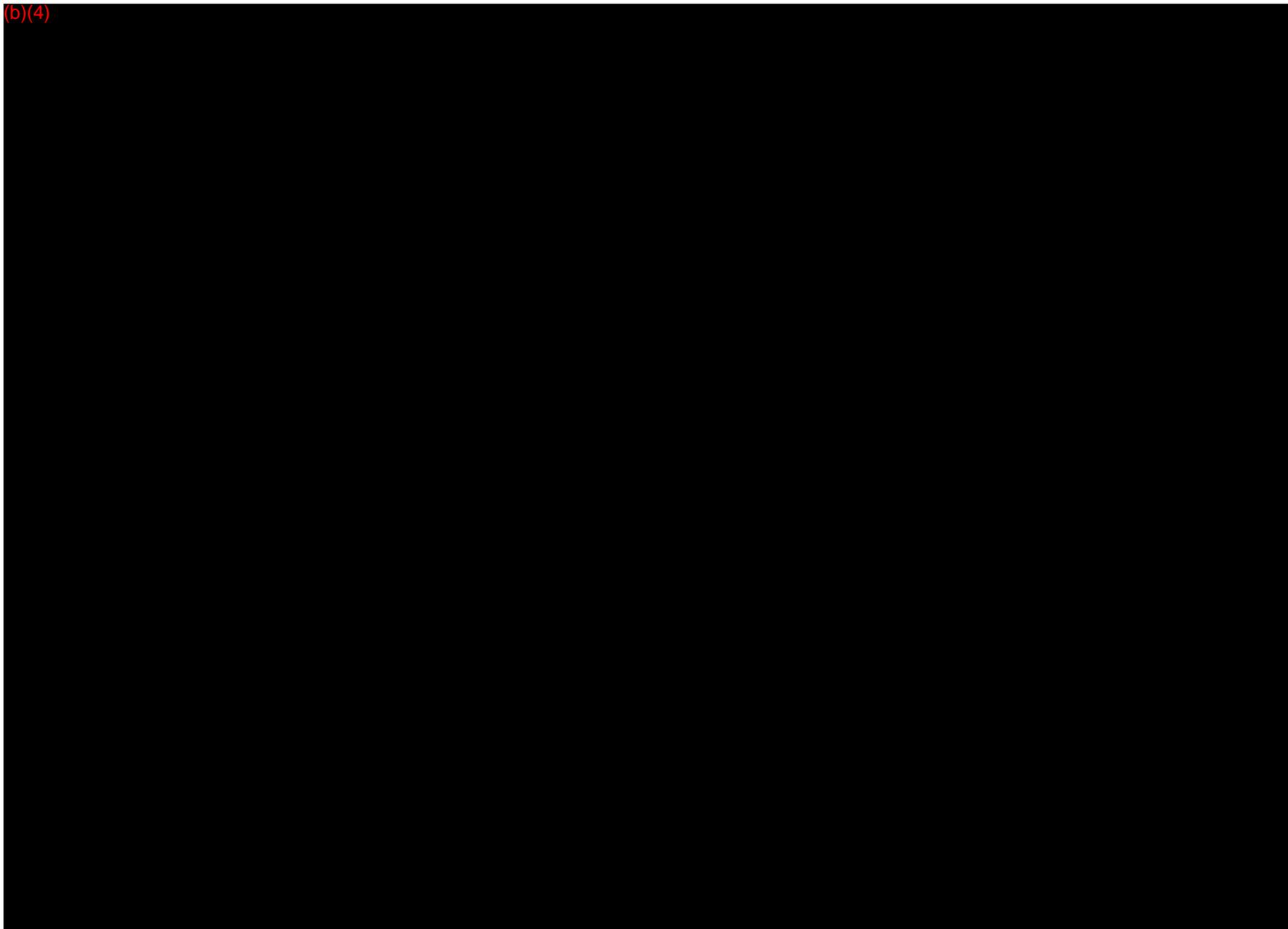
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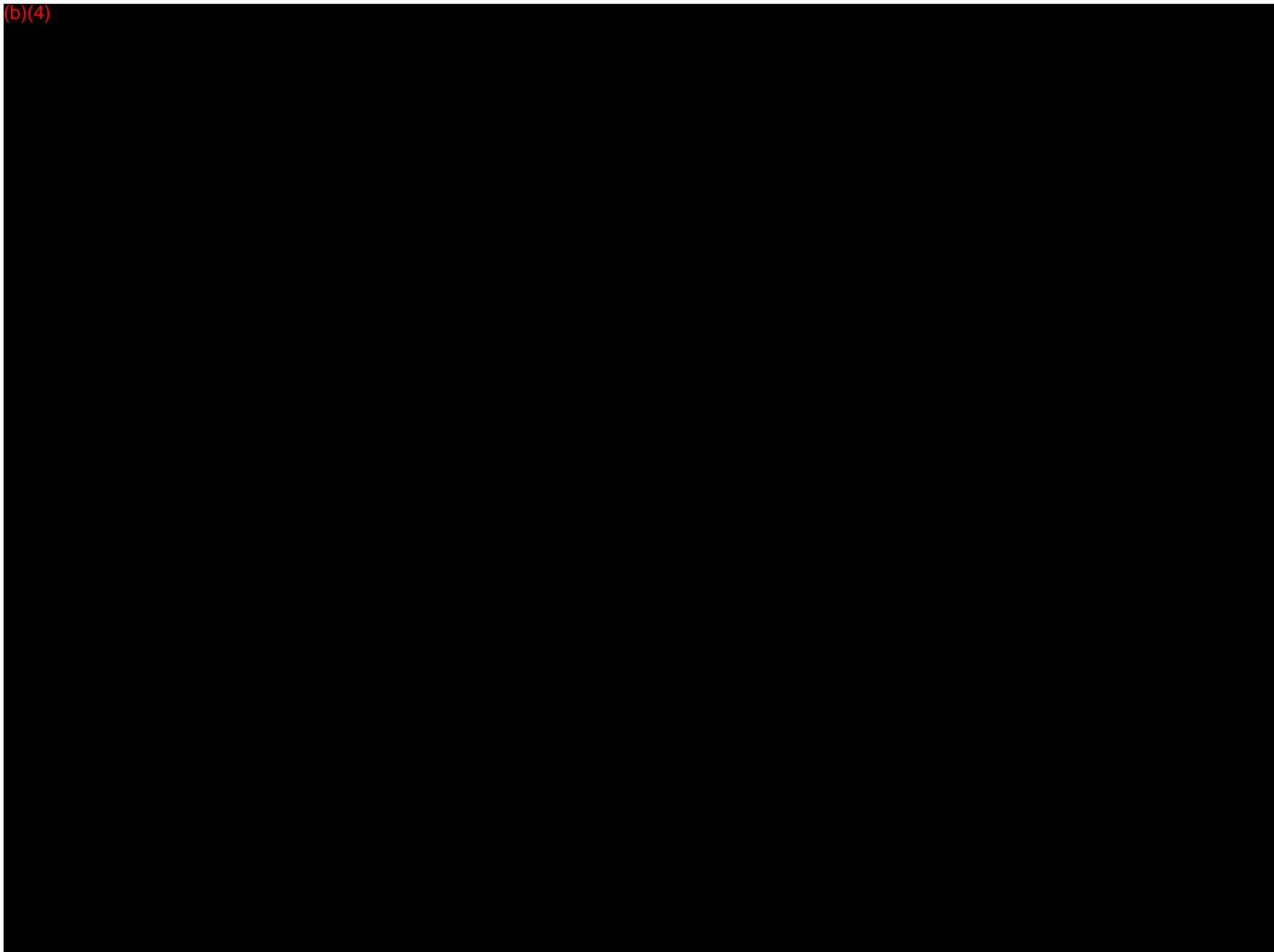
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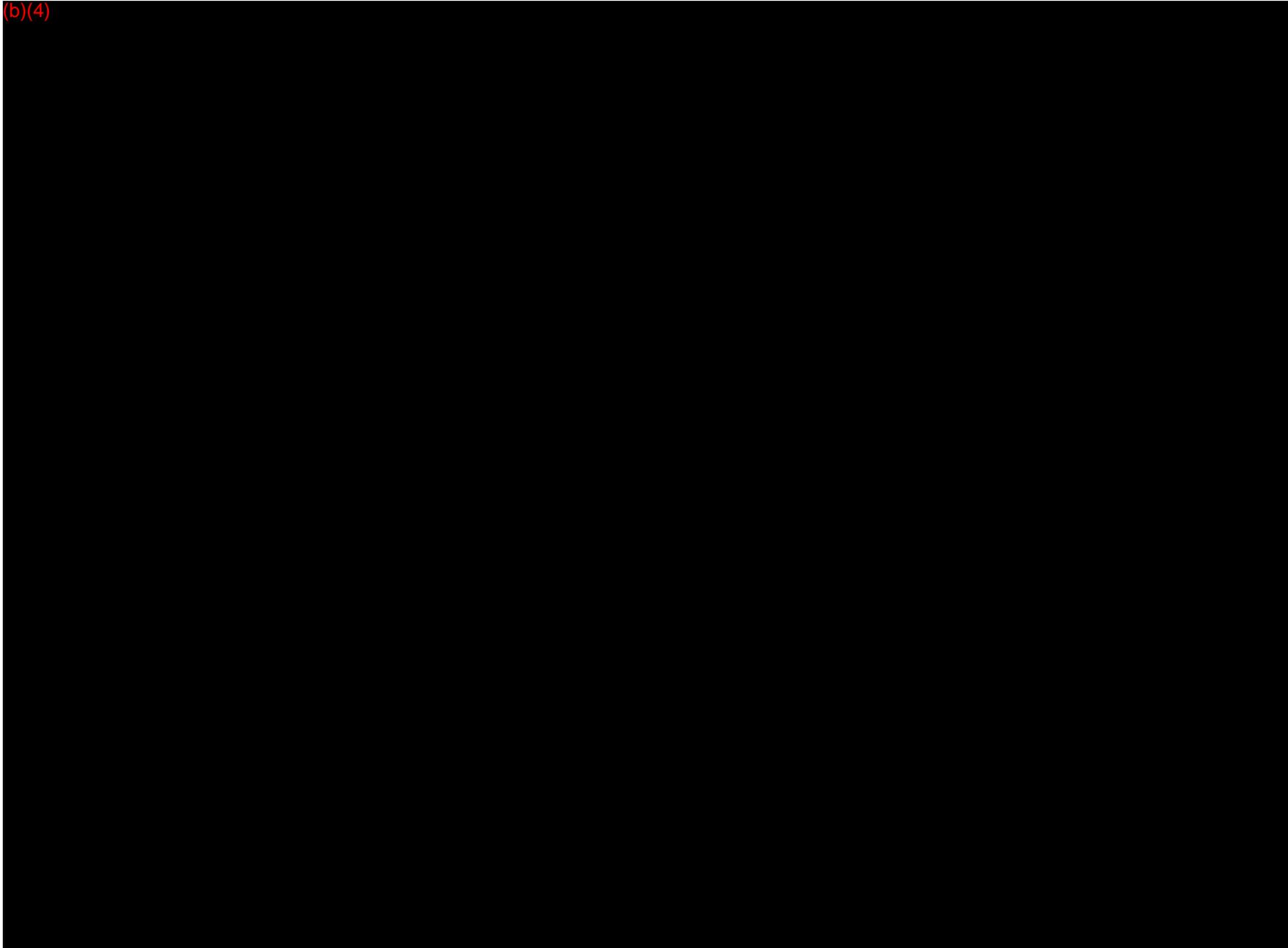
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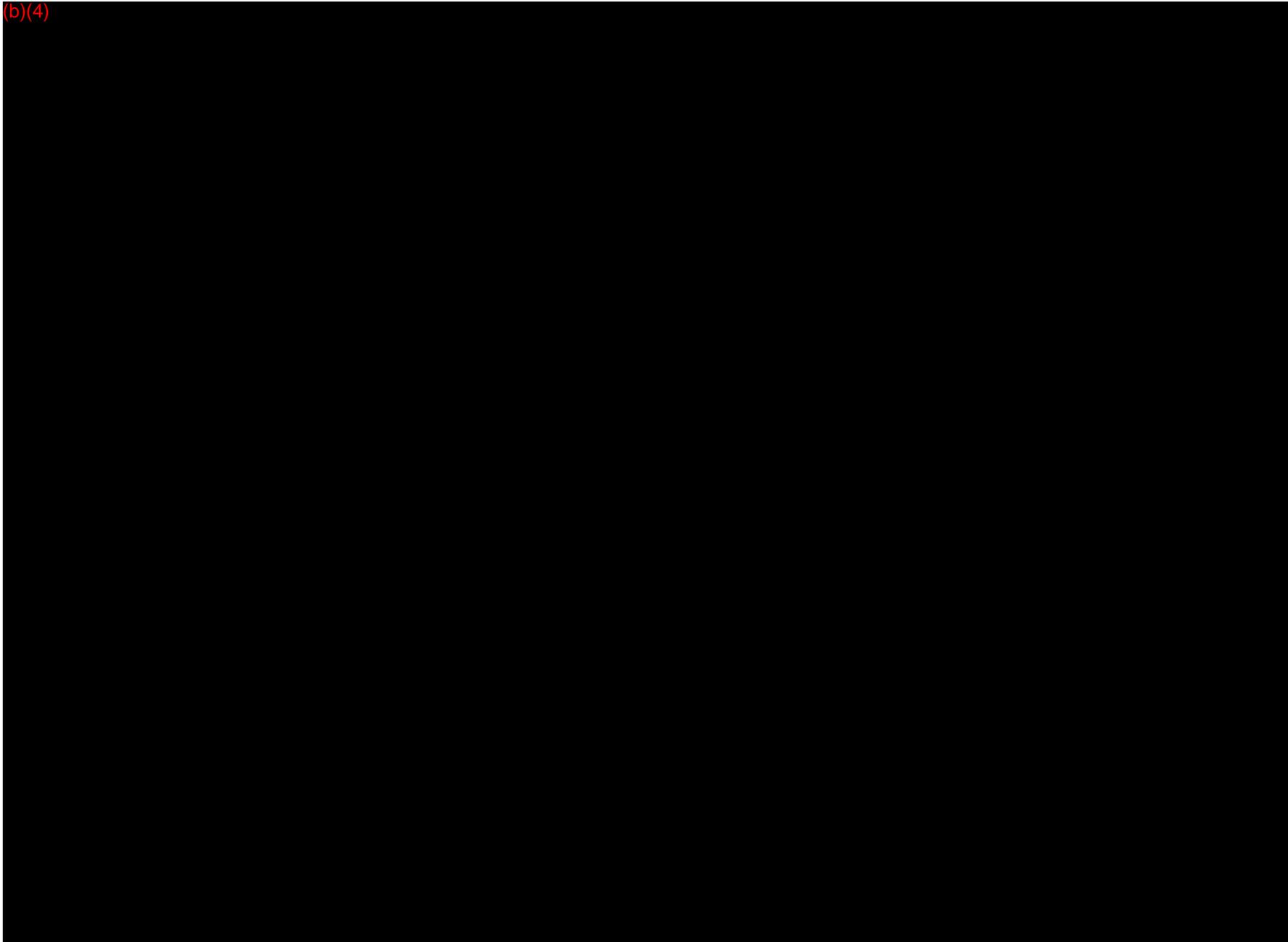
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**8.3 Verification Activities**

As of the date of filing this pre-market notification all verification and validation activities have been completed.

Tests to confirm conformance with ISO/EN standards are conducted by outside test laboratories recognized by an ISO Notified Body, using protocols defined by those test labs.

Verification and Validation activities for both LC Bead and Bead Block™ have been substantially completed as appropriate in accordance with the verification and validation protocols. (b)(4)

**8.3.1 Specific Verification and Validation Activities**

**8.3.1.1 Biocompatibility**

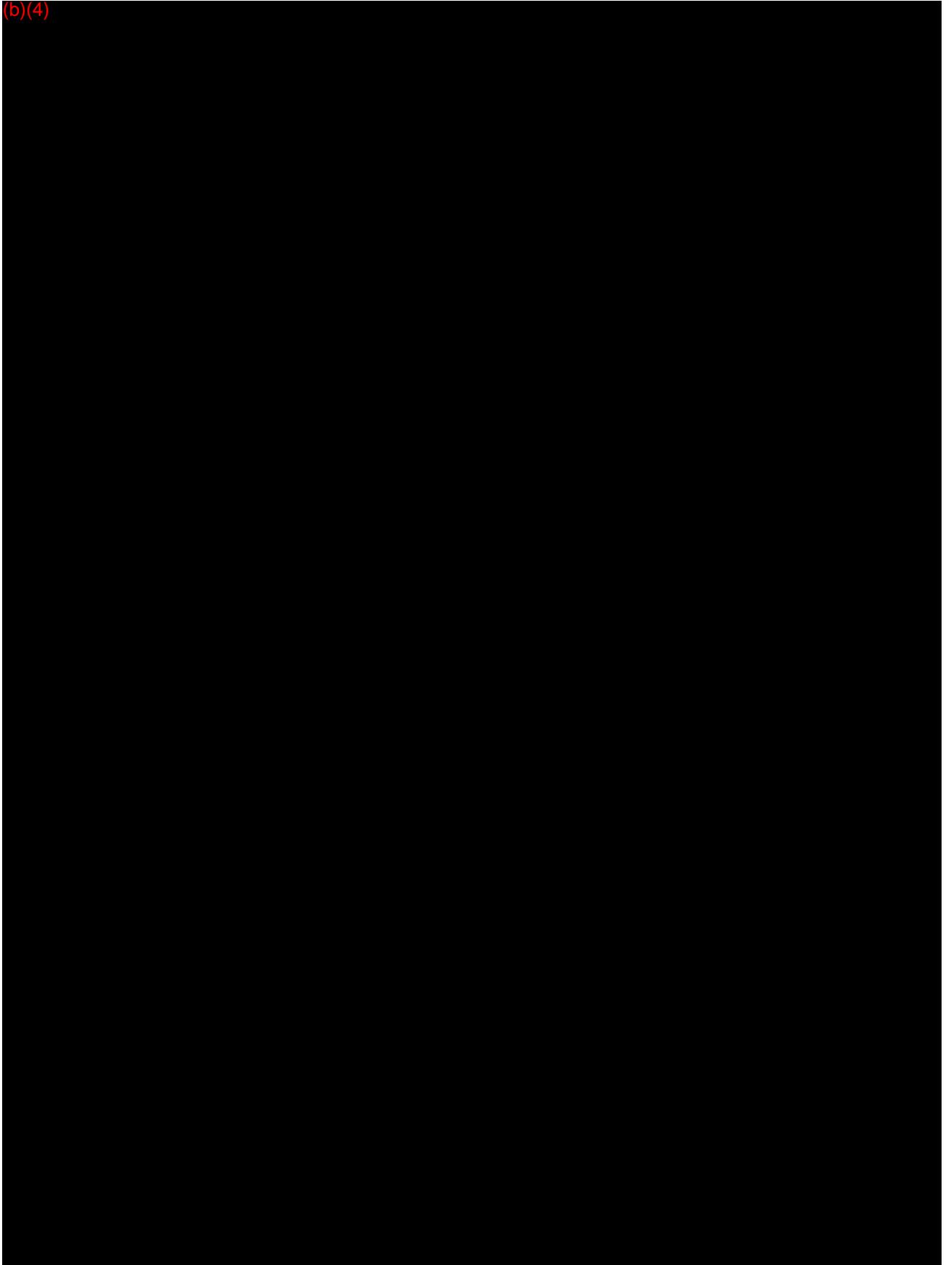
The biocompatibility testing listed in Table 8-4 provides a summary of the testing performed in K023089, as the processes are unchanged from K042231, K 033761 and K023089, and product specifications are unchanged, no additional biocompatibility testing was necessary:

<b>Biocompatibility Test</b>	<b>Pass/Fail</b>
Genotoxicity: In Vitro Chromosomal Aberration Study in Mammalian Cells	Pass
Mouse Bone Marrow Micronucleus Study	Pass
In Vitro Hemolysis Study (Modified ASTM-Direct Contact Method)	Pass
ISO Muscle Implantation Study in the Rabbit	Pass
Cytotoxicity Study using the ISO Elution Method	Pass
ISO Sensitization Study in the Guinea Pig	Pass
ISO Acute Intracutaneous Reactivity Study in the Rabbit	Pass
Chronic Toxicity Study in the Rat following Subcutaneous Implantation (13 weeks)	Pass
Subchronic Intravenous Toxicity Study in the Rat (14 day, saline extract)	Pass
Genotoxicity: Bacterial Reverse Mutation Study	Pass
ISO Acute Systemic Toxicity Study in the Mouse (liquid/chemical)	Pass
ISO Surgical Muscle Implantation in the Rabbit (26 weeks)	Pass

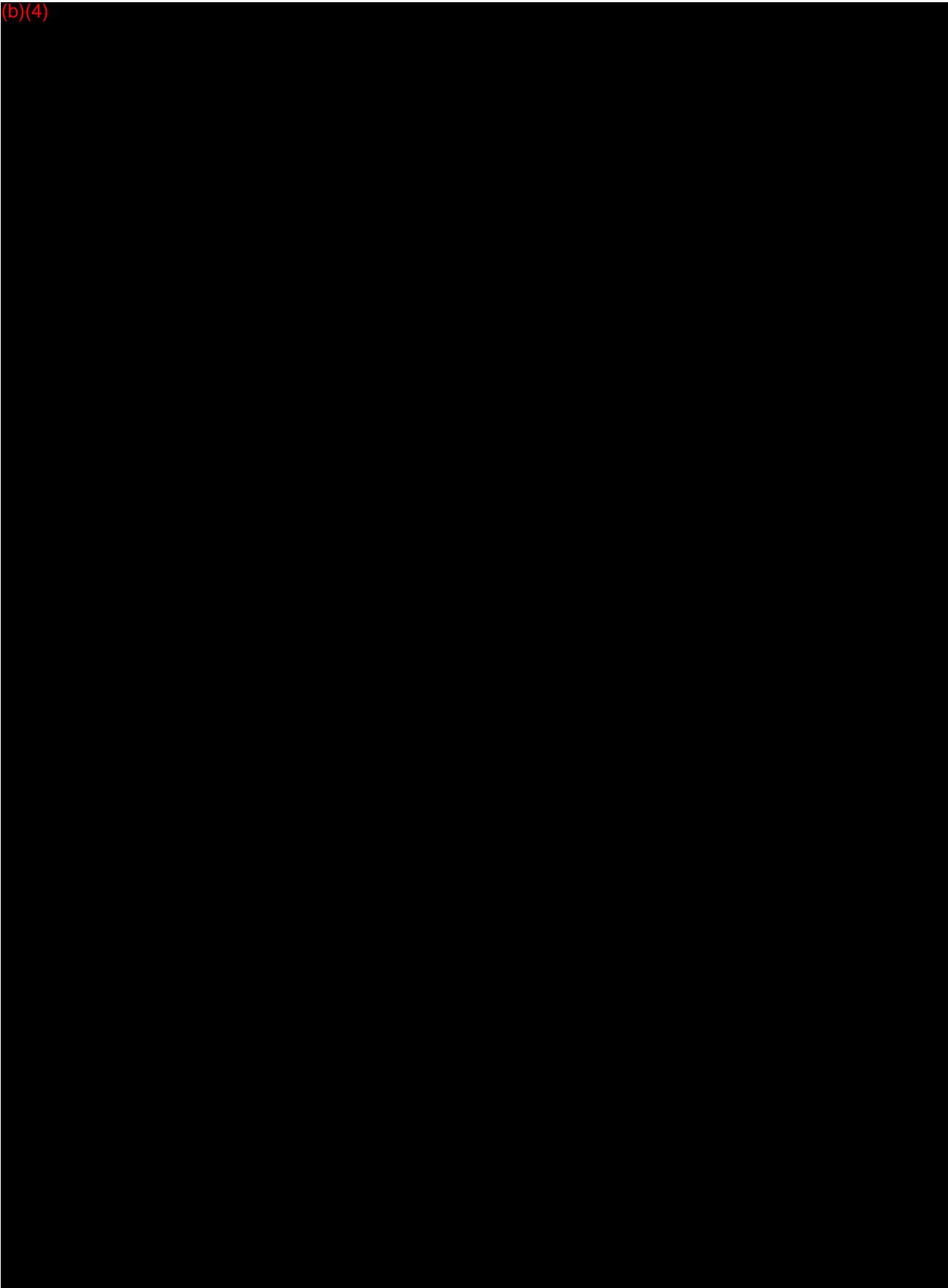
**Table 8-4 Biocompatibility testing summary**

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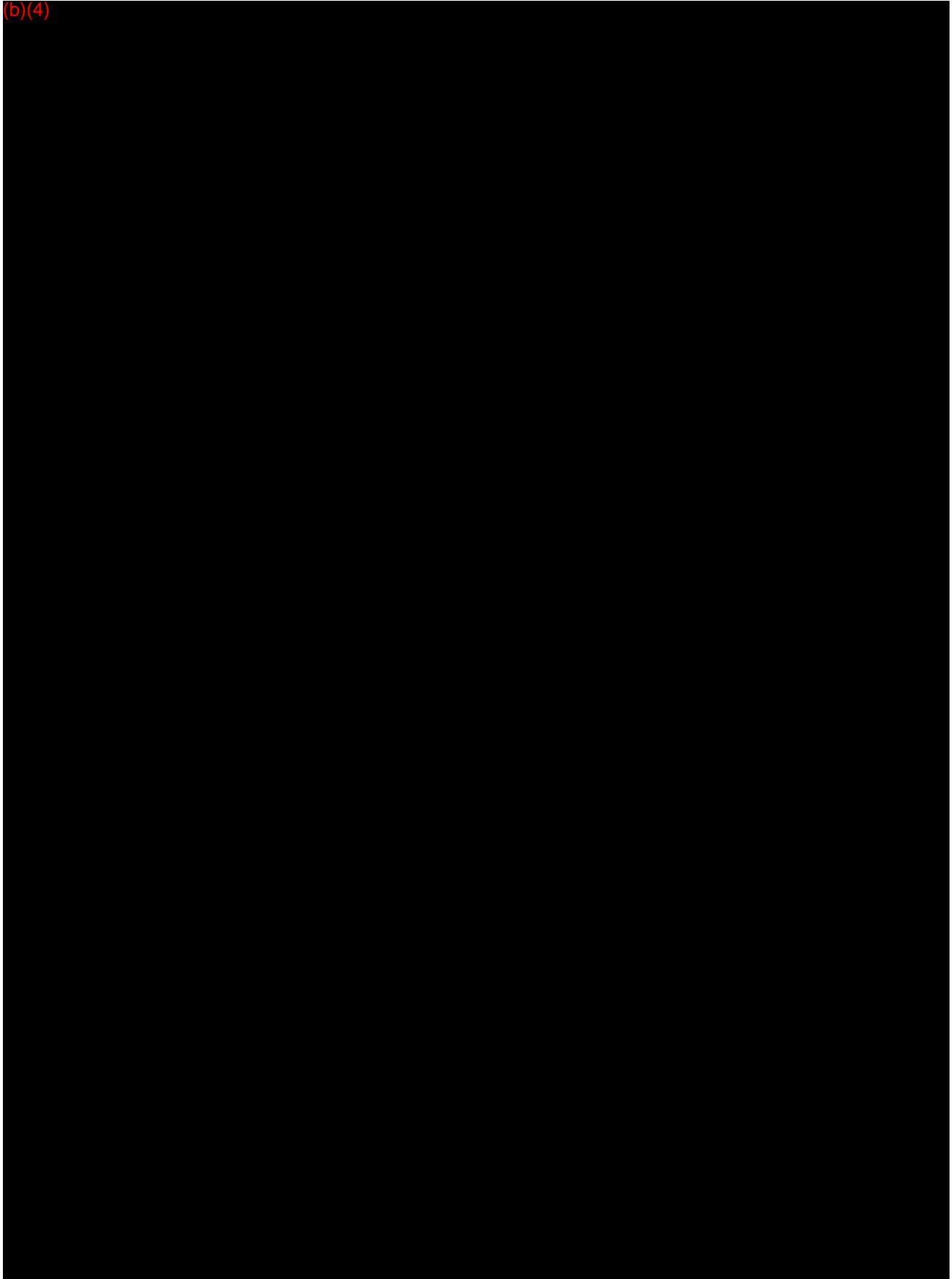
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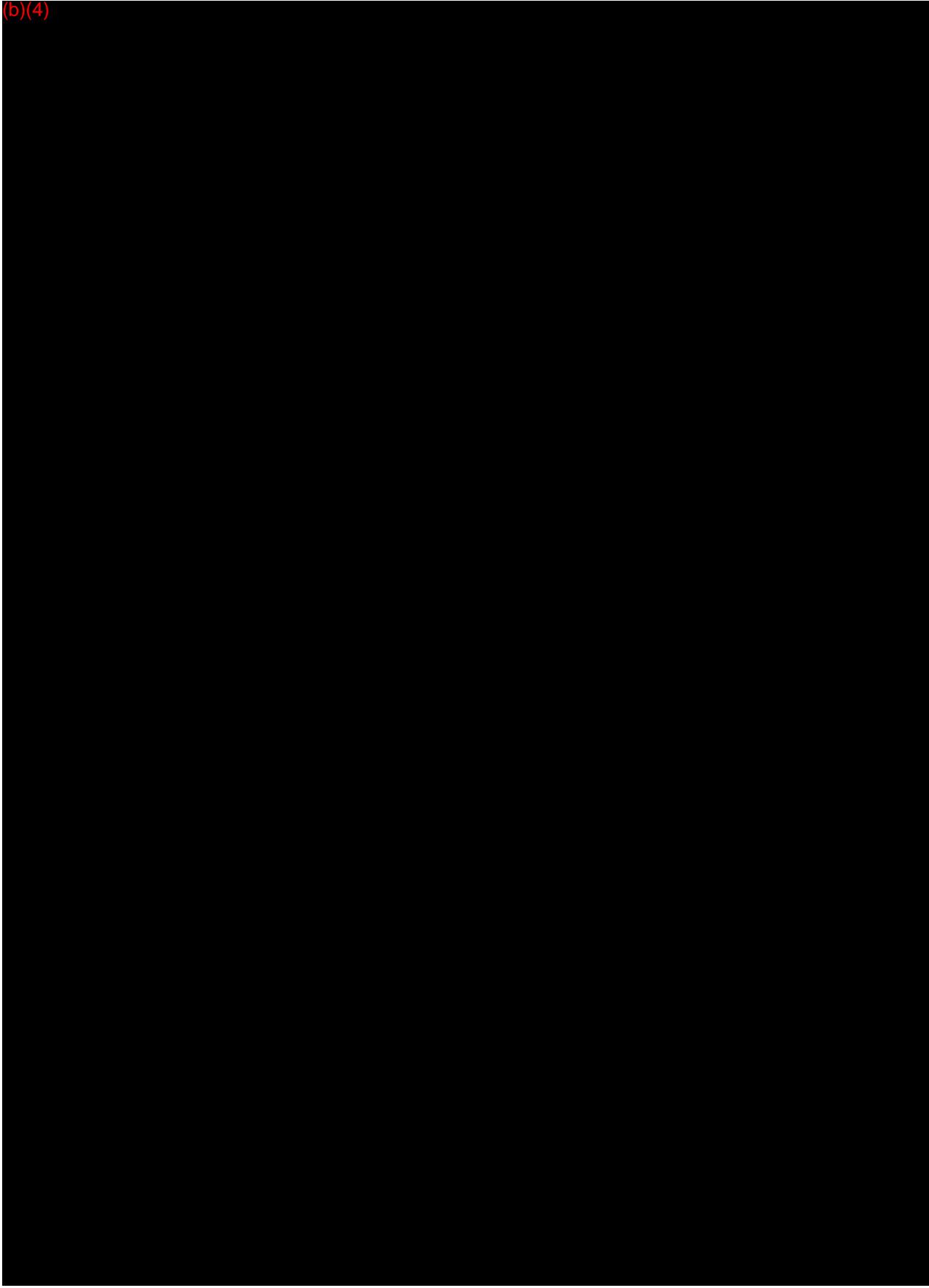
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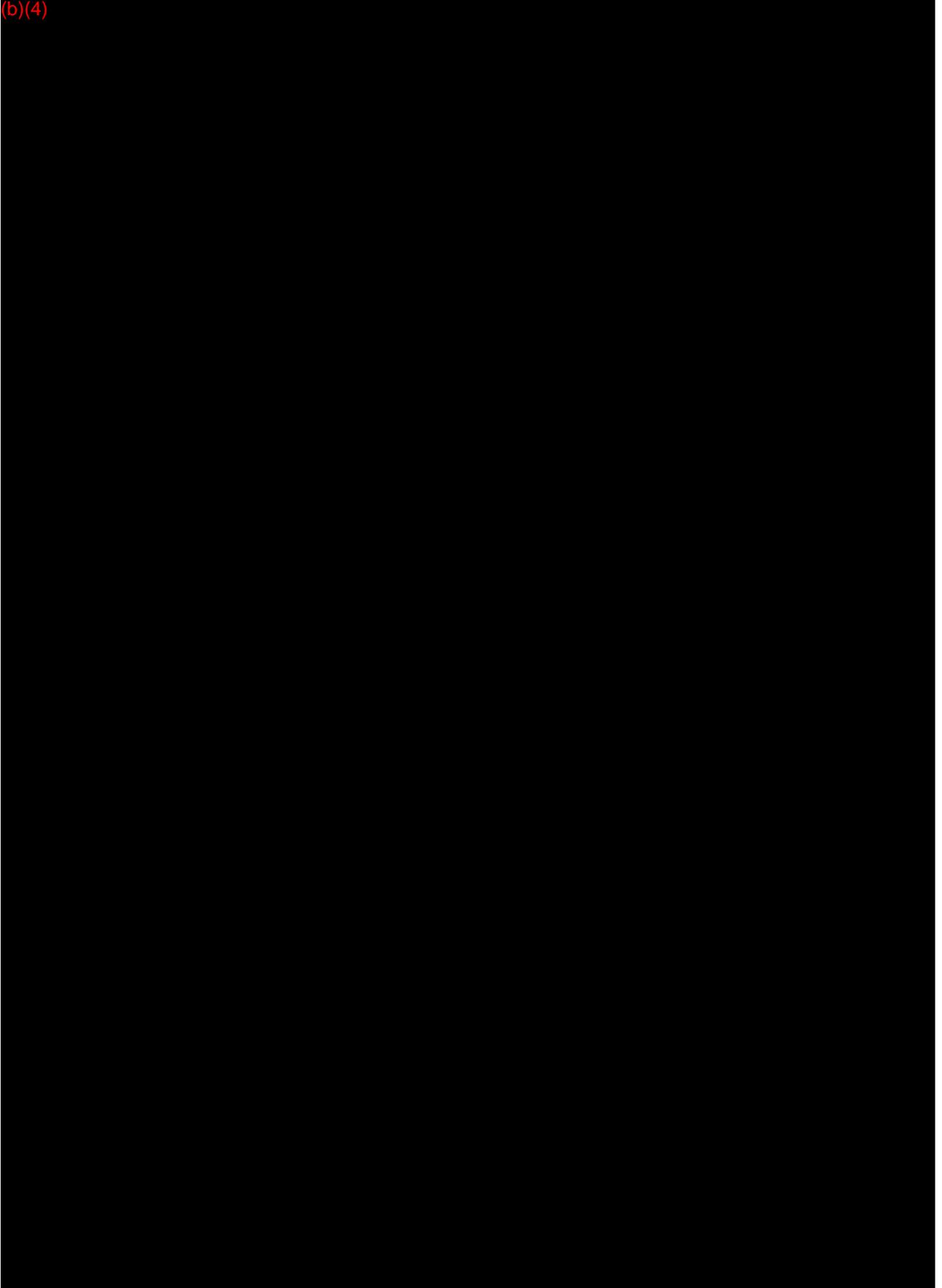
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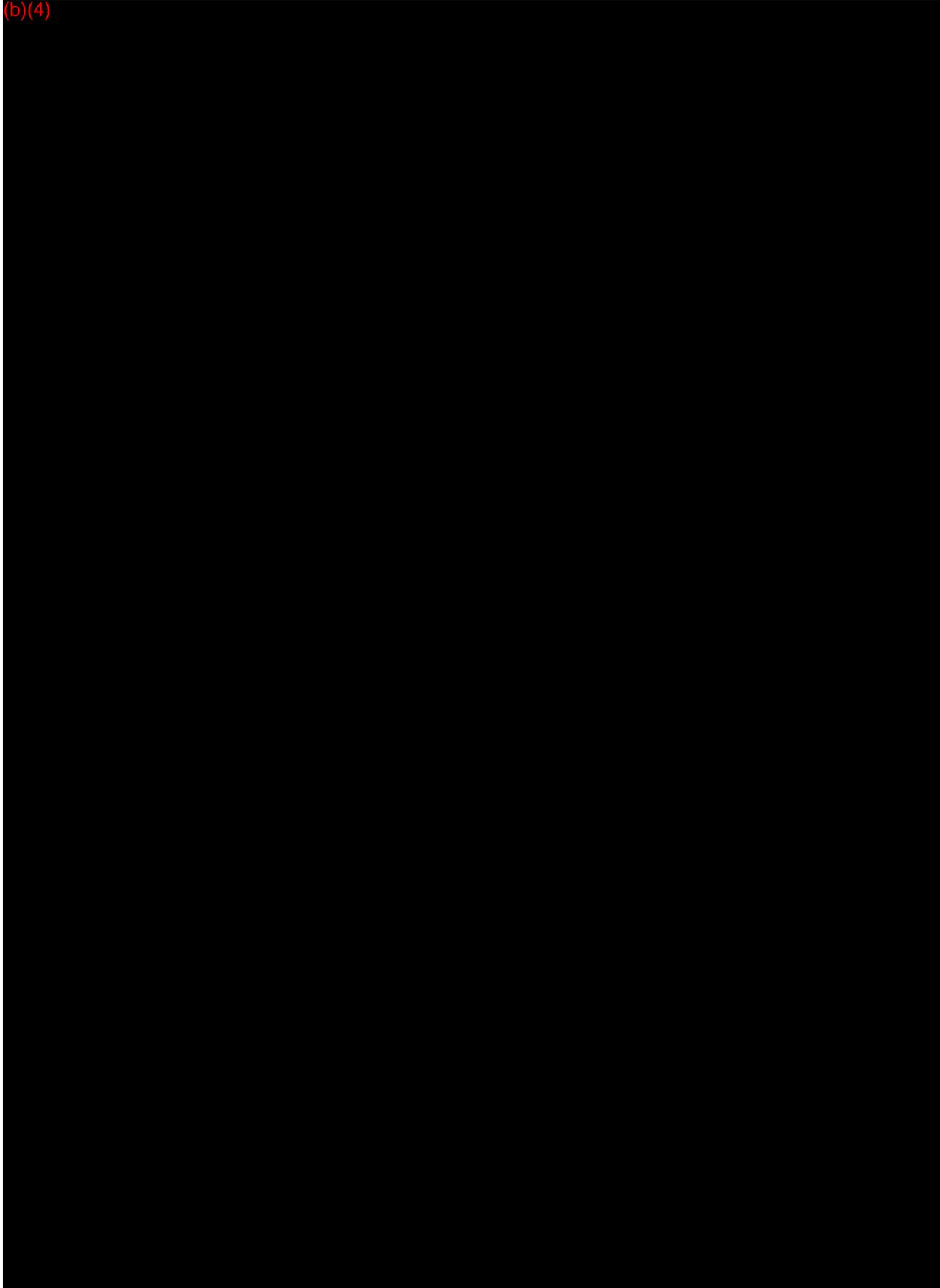


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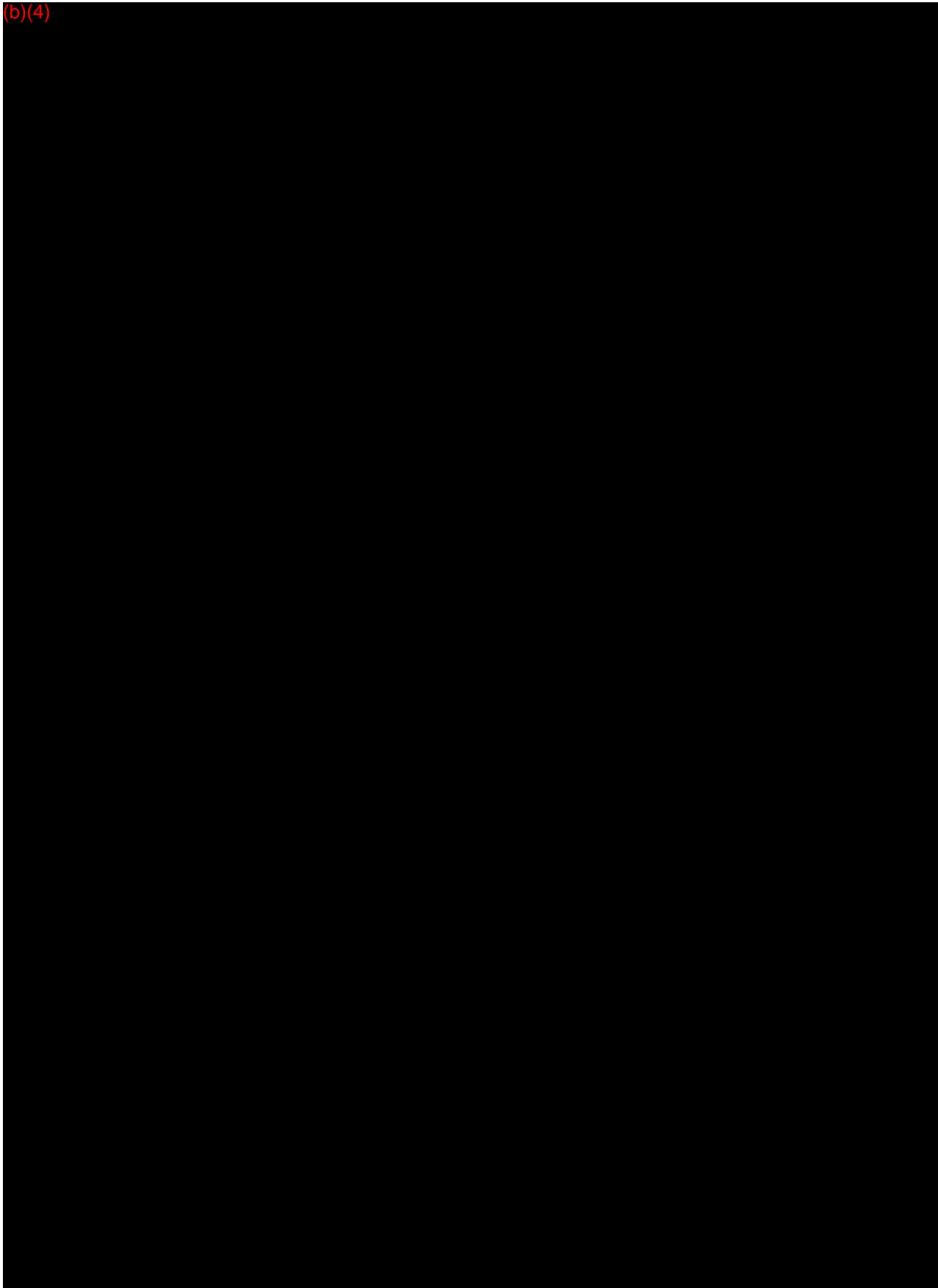




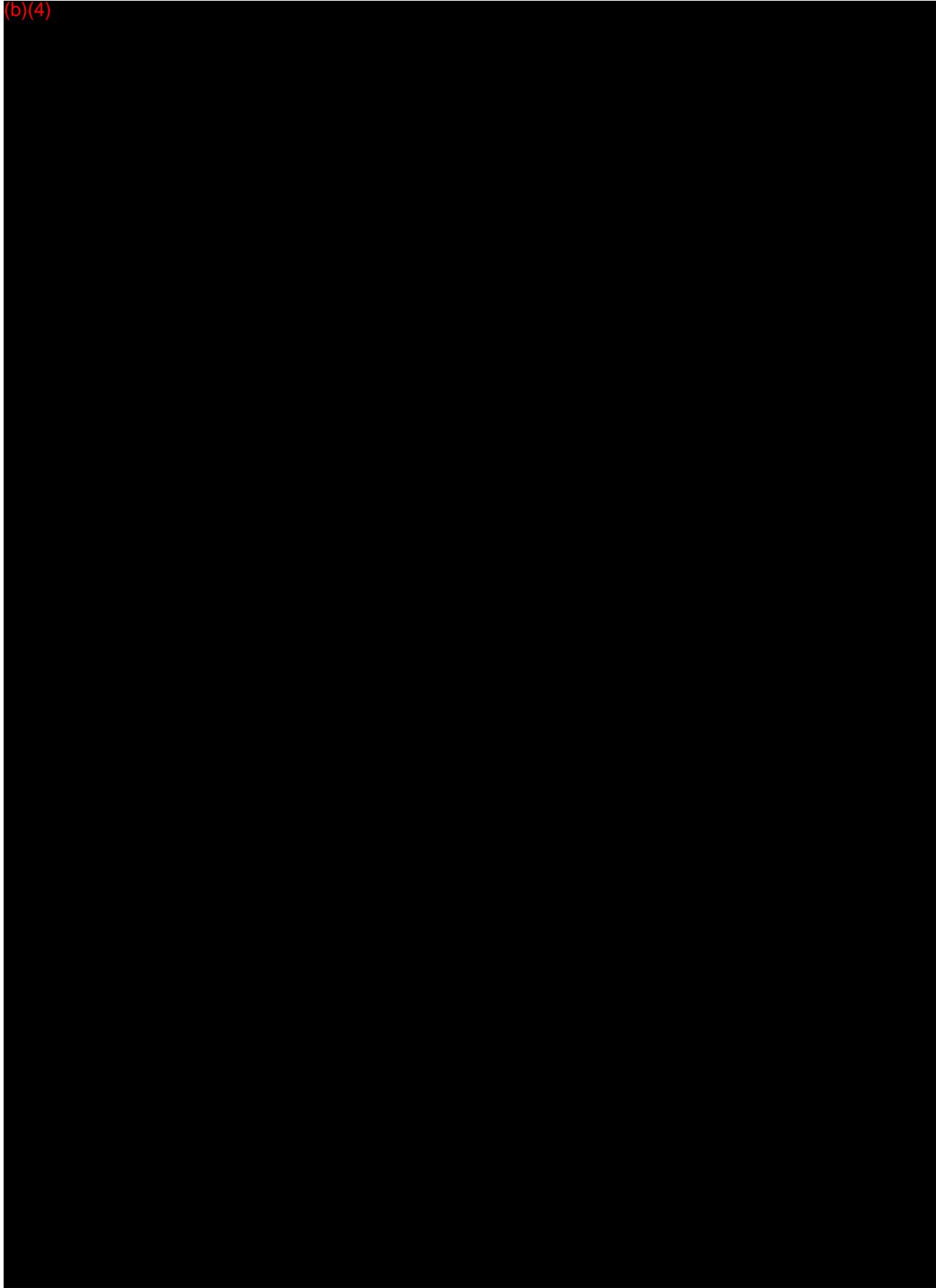
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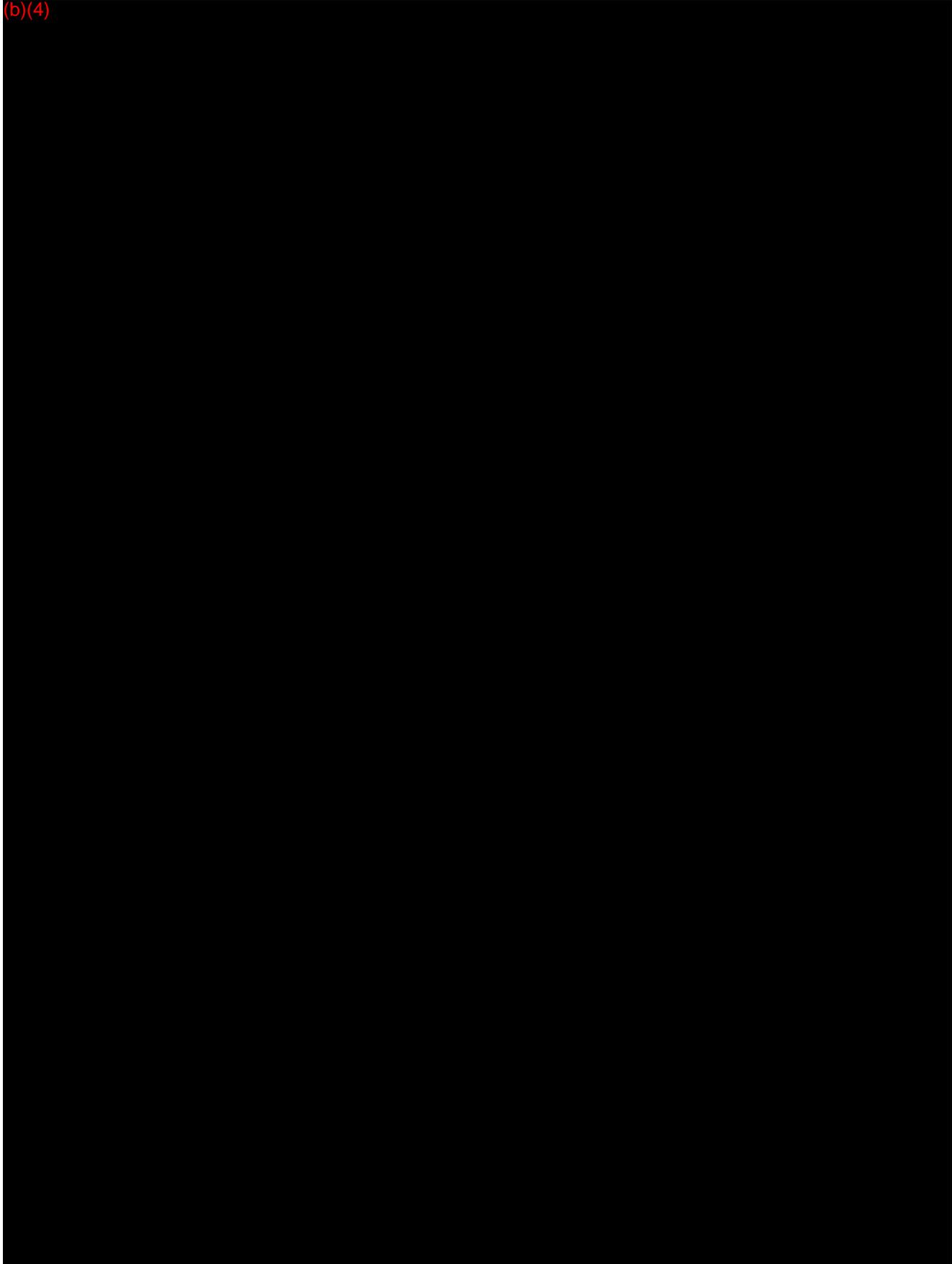
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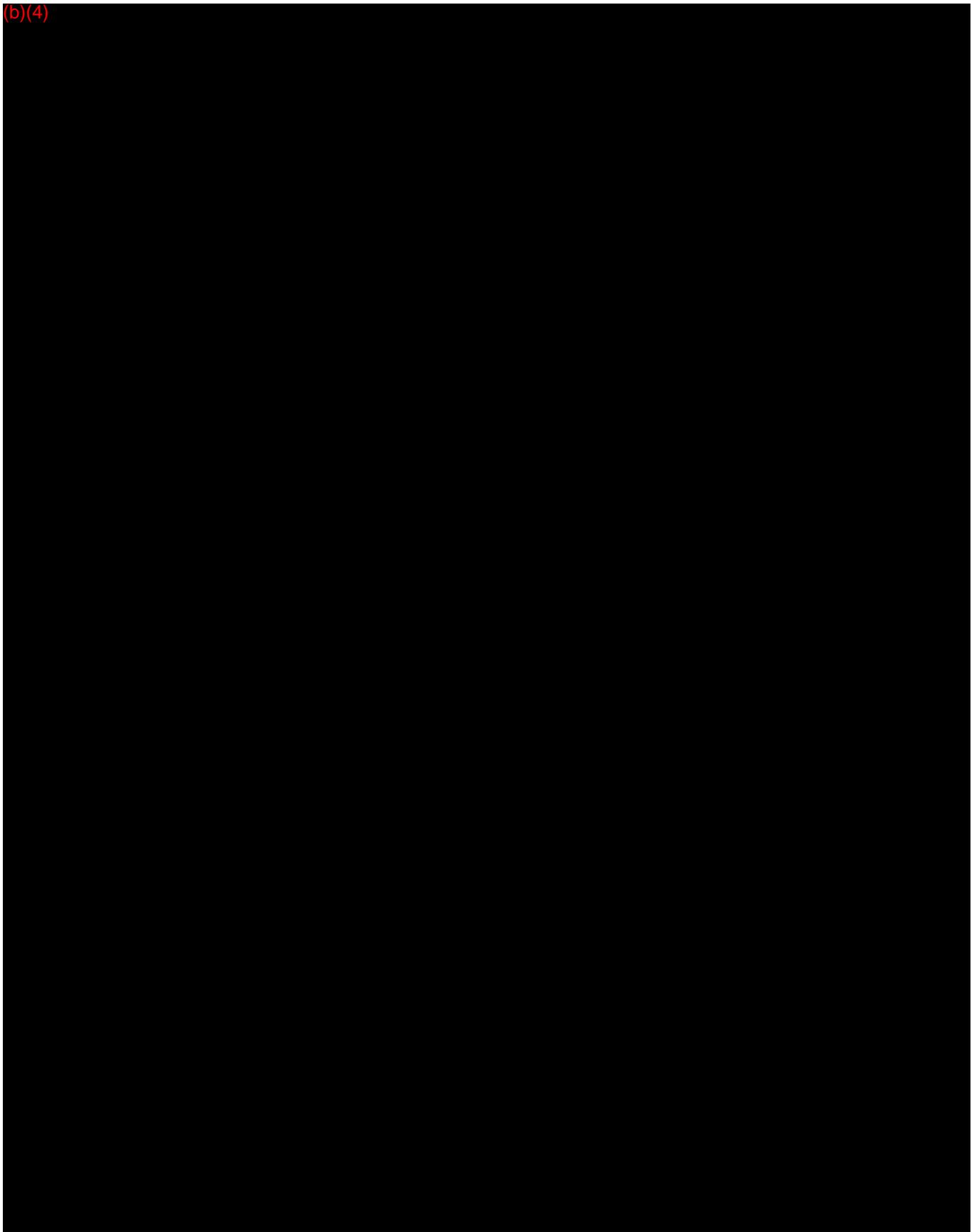
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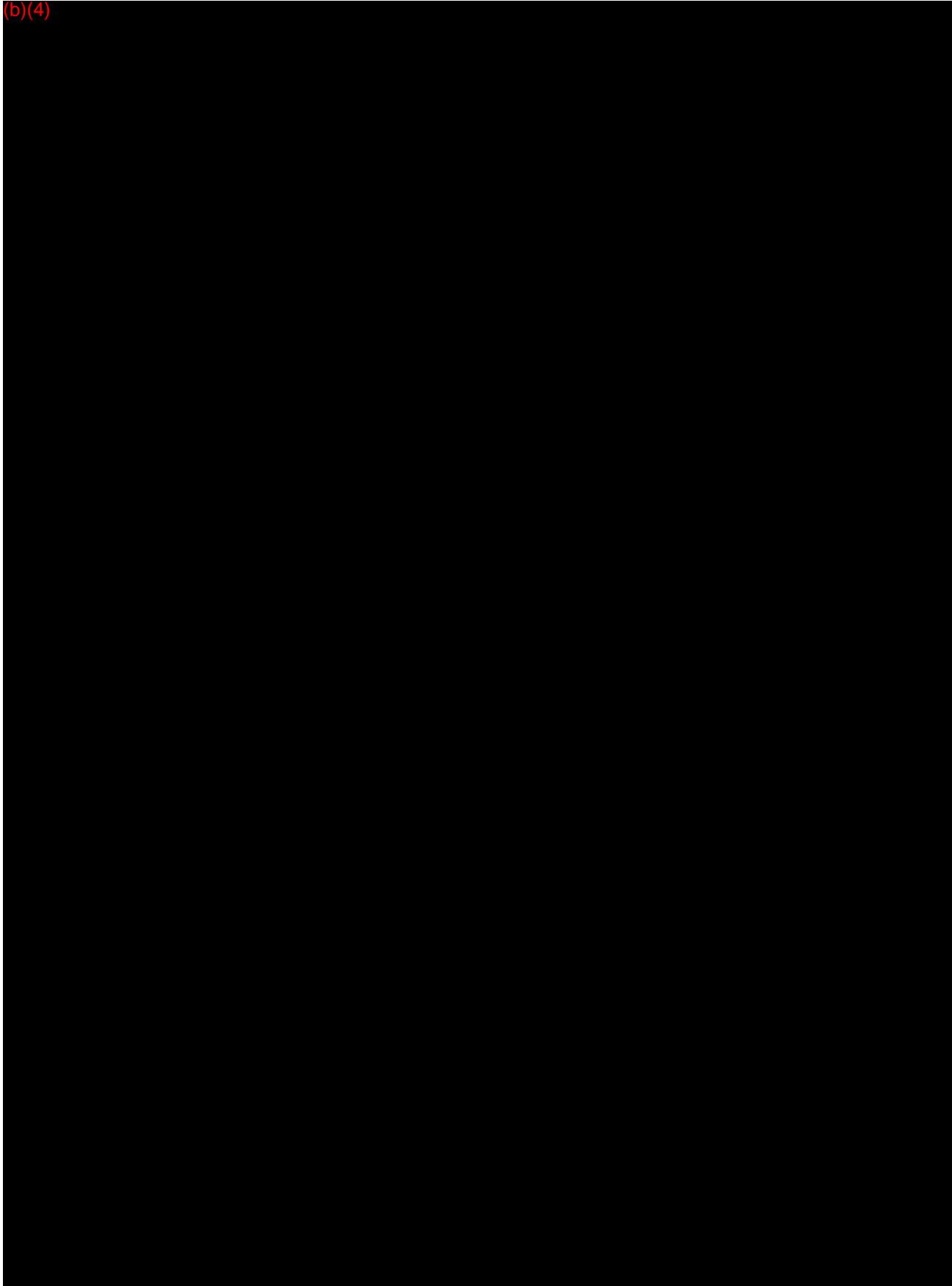
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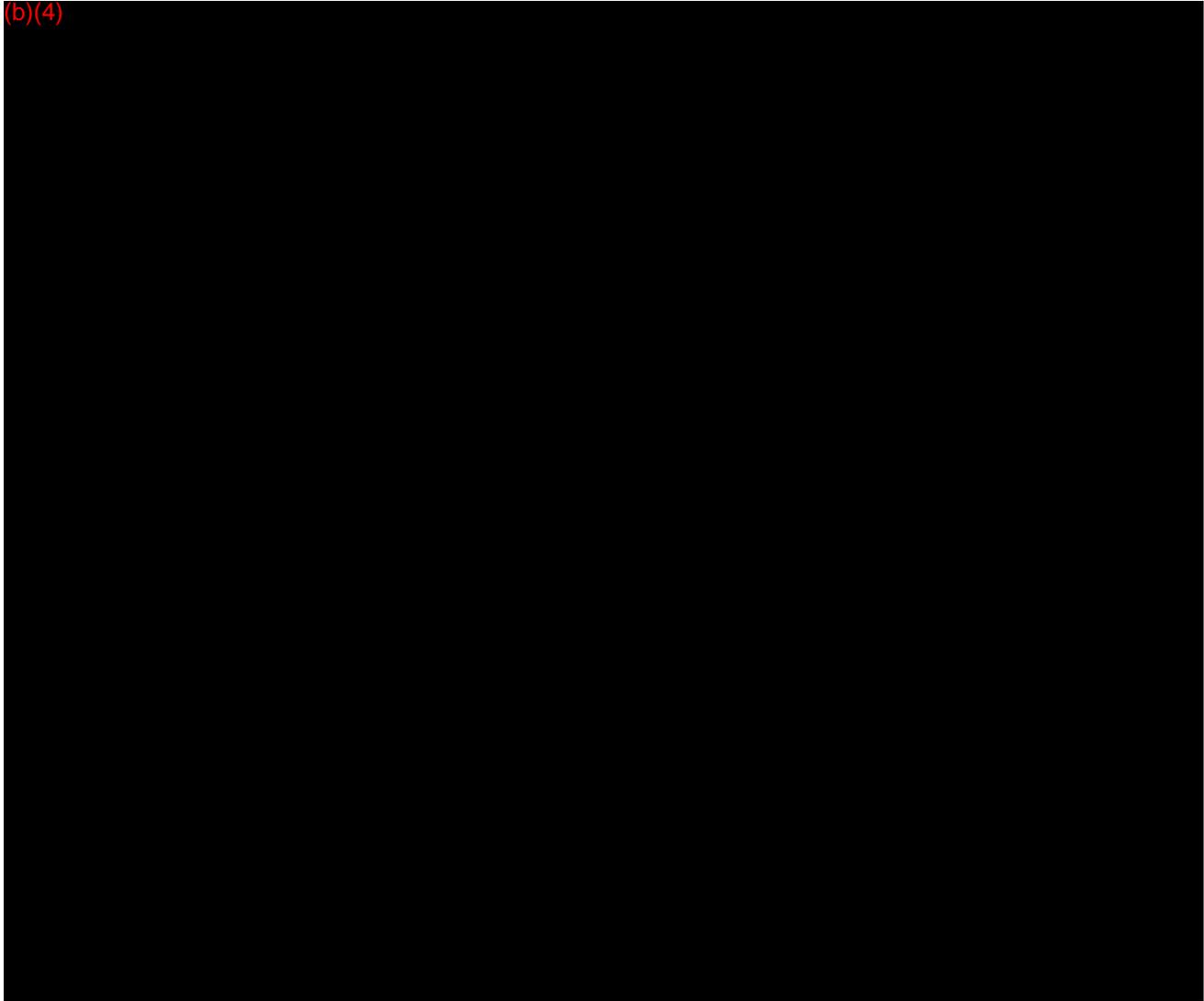
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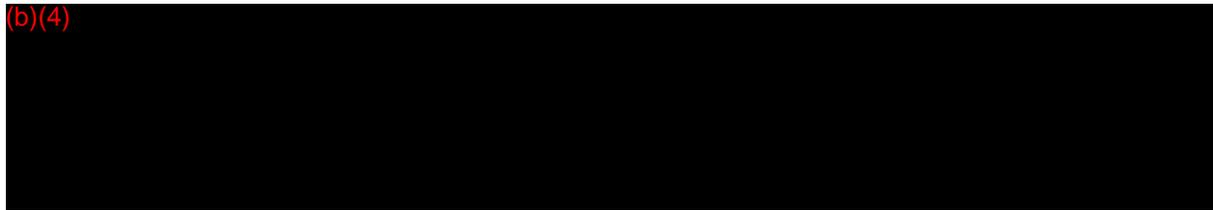
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### 8.3.1.2 Process verification

Biocompatibles UK Ltd., conducted process verification and validation in accordance with a series of written protocols (see K042231). (b)(4)

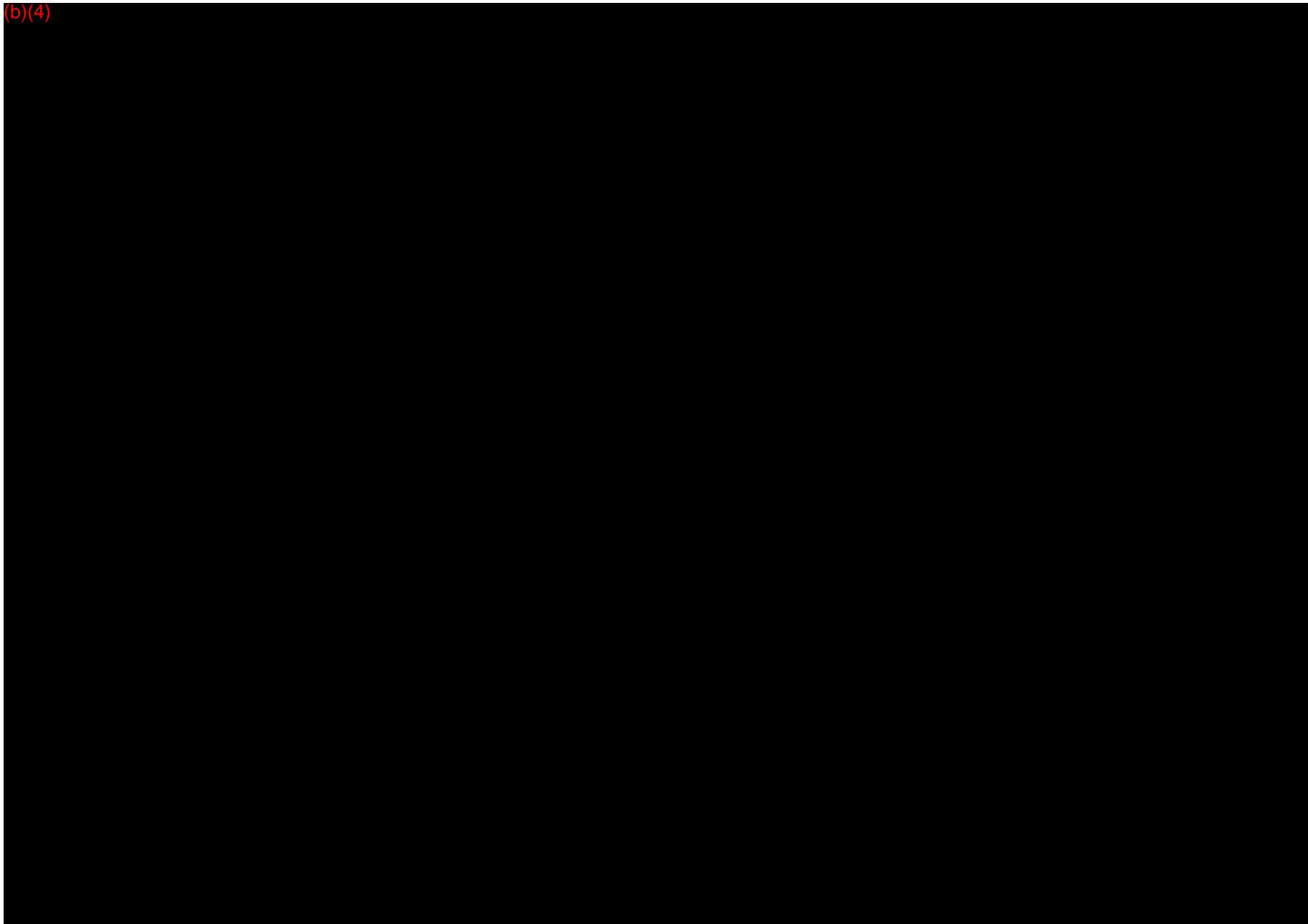
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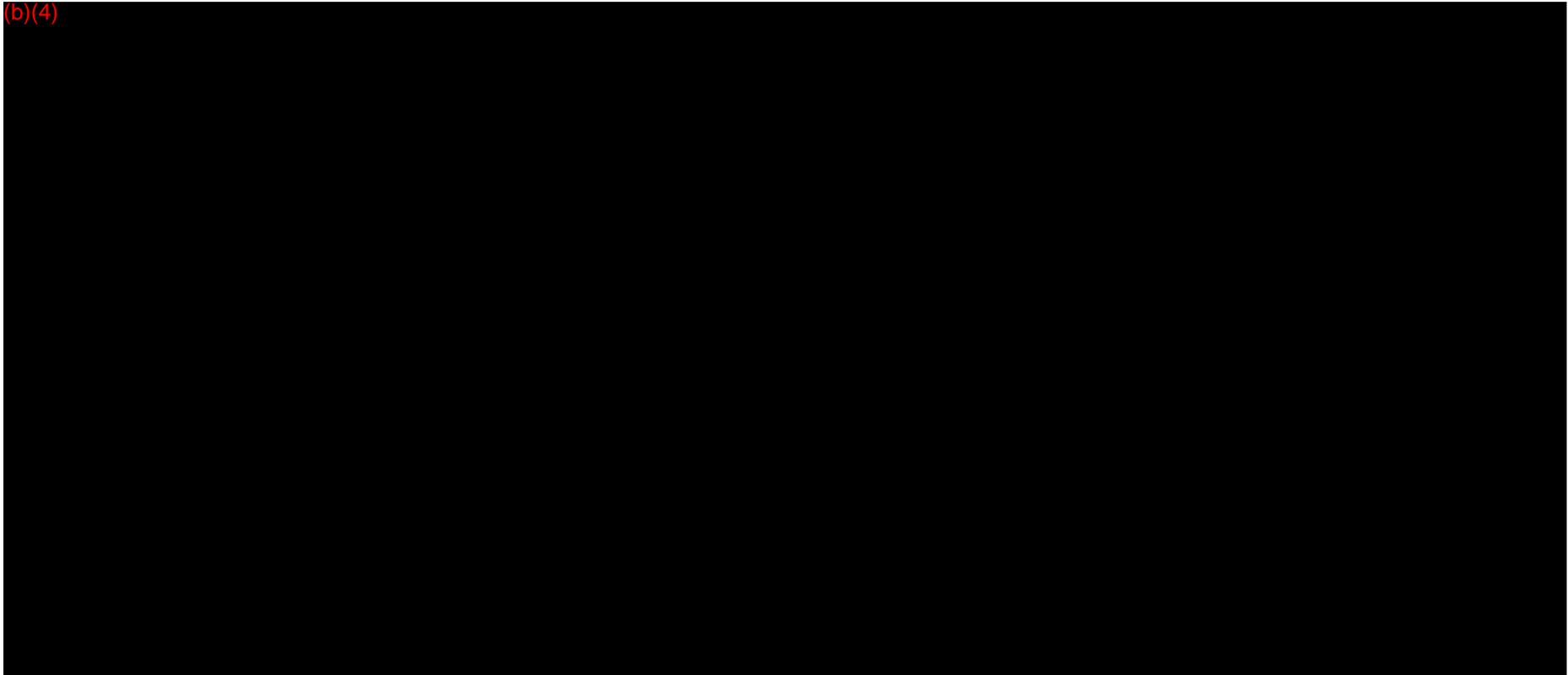
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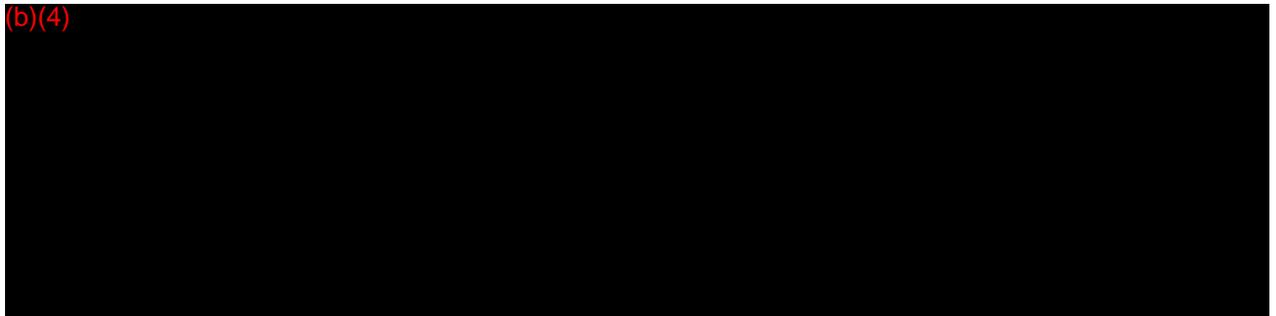
### 8.3.1.3 Stability

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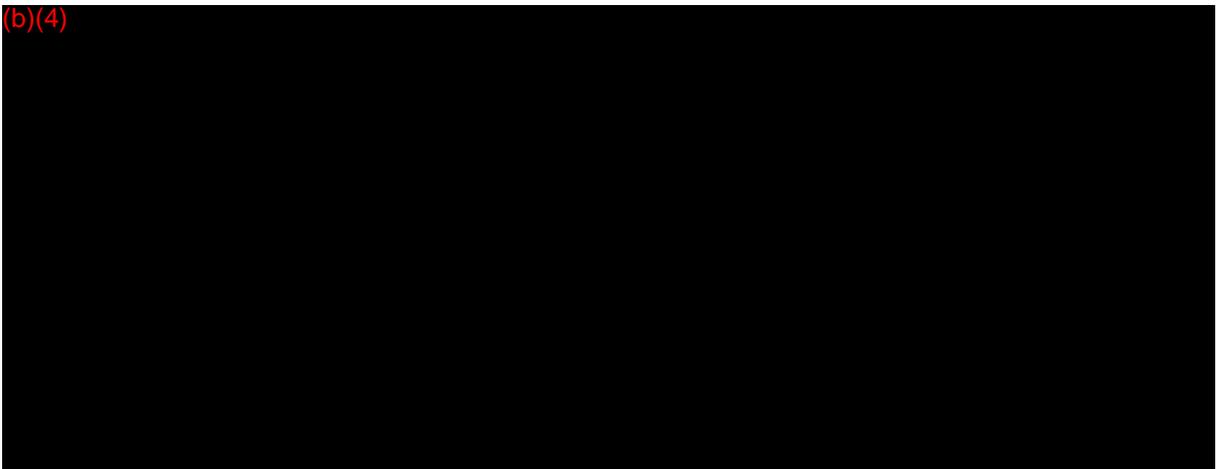
### 8.3.1.4 Package Integrity

(b)(4)

A large black rectangular redaction box covers the entire content of section 8.3.1.4.

### 8.3.1.5 Sterility

LC Bead Embolic Agent are validated as "Sterile". SAL is  $10^{-6}$  and in accordance with AAMI/ANSI/ISO 11134: Sterilization of health care products-Requirements for validation and routine control-Industrial moist heat sterilization, 2ed.. Sterilization is performed in accordance with EN 554: Sterilization of Medical Devices – validation and Routine Control of Sterilization by Moist Heat. (b)(4)

A large black rectangular redaction box covers the entire content of section 8.3.1.5.

### 8.3.1.6 Pyrogenicity

LC Bead and Bead Block™ are validated to be “Non-Pyrogenic” to an end product endotoxin level of <0.06 EU/ML (b)(4)

(b)(4)

### 8.4 Identification of Changes made to Device Master Record

(b)(4)

### 8.5 Design Review

A Design Review was conducted as required in the Design Control procedure and signed-off by the designated individuals (See K042231).

(b)(4)



## **10 Appendix II – FDA Form(s) FDA- 3654**

10.1 FDA 3654 ISO 10993 – 1

Form Approved: OMB No. 0910-0120; Expiration Date: 8/31/10

Department of Health and Human Services Food and Drug Administration <b>STANDARDS DATA REPORT FOR 510(k)s</b> <i>(To be filled in by applicant)</i>		
This report and the Summary Report Table are to be completed by the applicant when submitting a 510(k) that references a national or international standard. A separate report is required for each standard referenced in the 510(k).		
TYPE OF 510(K) SUBMISSION <input checked="" type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated		
STANDARD TITLE <sup>1</sup> ISO/EN 10993-1; 1997 Biological Evaluation of Medical Devices, Part 1: Evaluation and Testing (now 2003)		
<b>Please answer the following questions</b>		Yes      No
Is this standard recognized by FDA <sup>2</sup> ? .....		<input checked="" type="checkbox"/> <input type="checkbox"/>
FDA Recognition number <sup>3</sup> .....		# 2-98 _____
Was a third party laboratory responsible for testing conformity of the device to this standard identified in the 510(k)? .....		<input checked="" type="checkbox"/> <input type="checkbox"/>
Is a summary report <sup>4</sup> describing the extent of conformance of the standard used included in the 510(k)? ..... If no, complete a summary report table.		<input checked="" type="checkbox"/> <input type="checkbox"/>
Does the test data for this device demonstrate conformity to the requirements of this standard as it pertains to this device? .....		<input checked="" type="checkbox"/> <input type="checkbox"/>
Does this standard include acceptance criteria? ..... If no, include the results of testing in the 510(k).		<input checked="" type="checkbox"/> <input type="checkbox"/>
Does this standard include more than one option or selection of tests? ..... If yes, report options selected in the summary report table.		<input type="checkbox"/> <input checked="" type="checkbox"/>
Were there any deviations or adaptations made in the use of the standard? ..... If yes, were deviations in accordance with the FDA supplemental information sheet (SIS) <sup>5</sup> ? .....		<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Were deviations or adaptations made beyond what is specified in the FDA SIS? ..... If yes, report these deviations or adaptations in the summary report table.		<input type="checkbox"/> <input checked="" type="checkbox"/>
Were there any exclusions from the standard? ..... If yes, report these exclusions in the summary report table.		<input type="checkbox"/> <input checked="" type="checkbox"/>
Is there an FDA guidance <sup>6</sup> that is associated with this standard? ..... If yes, was the guidance document followed in preparation of this 510k? .....		<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Title of guidance: <u>Required Biocompatibility Training and Toxicology Profiles for Evaluation of Medical Devices May 1, 1</u>		
<small> <sup>1</sup> The formatting convention for the title is: (SDO) (numeric identifier) (title of standard) (date of publication)  <sup>2</sup> Authority (21 U.S.C. 360d). <a href="http://www.fda.gov/oc/ohrt/ohrtprog.html">www.fda.gov/oc/ohrt/ohrtprog.html</a>  <sup>3</sup> <a href="http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm">http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm</a>  <sup>4</sup> The summary report should include: any adaptations used to adapt to the device under review (for example, alternative test methods); choices made when options or a selection of methods are described; deviations from the standard; requirements not applicable to the device; and the name and address of the test laboratory or certification body involved in conformance assessment to this standard. The summary report includes information on all standards utilized during the development of the device.  <sup>5</sup> The supplemental information sheet (SIS) is additional information which is necessary before FDA recognizes the standard. Found at <a href="http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm">http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm</a>  <sup>6</sup> The online search for CDRH Guidance Documents can be found at <a href="http://www.fda.gov/cdrh/guidance.html">www.fda.gov/cdrh/guidance.html</a> </small>		

<b>EXTENT OF STANDARD CONFORMANCE SUMMARY REPORT TABLE</b>		
STANDARD TITLE ISO/EN 10993-1; 1997 Biological Evaluation of Medical Devices, Part I: Evaluation and Testing (now 2003)		
<b>CONFORMANCE WITH STANDARD SECTIONS*</b>		
SECTION NUMBER 6	SECTION TITLE Selection of tests	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * tests were selected from Tables 1 and 2 as appropriate - referring to 10993 Parts-3,4,5,6,10 &11		
DESCRIPTION ISO 10993-1 is used for the selection of tests based on the device - appropriate tests were identified and selected.		
JUSTIFICATION Per the standard and advice from GLP lab used.		
SECTION NUMBER	SECTION TITLE	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED *		
DESCRIPTION		
JUSTIFICATION		
SECTION NUMBER	SECTION TITLE	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED *		
DESCRIPTION		
JUSTIFICATION		
SECTION NUMBER	SECTION TITLE	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED *		
DESCRIPTION		
JUSTIFICATION		
<p>* For completeness list all sections of the standard and indicate whether conformance is met. If a section is not applicable (N/A) an explanation is needed under "justification." Some standards include options, so similar to deviations, the option chosen needs to be described and adequately justified as appropriate for the subject device. Explanation of all deviations or description of options selected when following a standard is required under "type of deviation or option selected," "description" and "justification" on the report. More than one page may be necessary.</p> <p>♦ Types of deviations can include an exclusion of a section in the standard, a deviation brought out by the FDA supplemental information sheet (SIS), a deviation to adapt the standard to the device, or any adaptation of a section.</p>		
<p><b>Paperwork Reduction Act Statement</b></p> <p>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to:</p> <p style="text-align: center;">Center for Devices and Radiological Health 1350 Piccard Drive Rockville, MD 20850</p> <p style="text-align: center;"><i>An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.</i></p>		

10.2 FDA 3654 ISO 10993-3

Form Approved: OMB No. 0910-0120; Expiration Date: 8/31/10

Department of Health and Human Services Food and Drug Administration <b>STANDARDS DATA REPORT FOR 510(k)s</b> <i>(To be filled in by applicant)</i>		
This report and the Summary Report Table are to be completed by the applicant when submitting a 510(k) that references a national or international standard. A separate report is required for each standard referenced in the 510(k).		
TYPE OF 510(K) SUBMISSION <input checked="" type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated		
STANDARD TITLE <sup>1</sup> ISO/EN 10993-3; 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity..... (now 2003)		
<b>Please answer the following questions</b>		
	Yes	No
Is this standard recognized by FDA <sup>2</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FDA Recognition number <sup>3</sup>	# 2-117	
Was a third party laboratory responsible for testing conformity of the device to this standard identified in the 510(k)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is a summary report <sup>4</sup> describing the extent of conformance of the standard used included in the 510(k)? If no, complete a summary report table.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does the test data for this device demonstrate conformity to the requirements of this standard as it pertains to this device?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does this standard include acceptance criteria? If no, include the results of testing in the 510(k).	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does this standard include more than one option or selection of tests? If yes, report options selected in the summary report table.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were there any deviations or adaptations made in the use of the standard? If yes, were deviations in accordance with the FDA supplemental information sheet (SIS) <sup>5</sup> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were deviations or adaptations made beyond what is specified in the FDA SIS? If yes, report these deviations or adaptations in the summary report table.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were there any exclusions from the standard? If yes, report these exclusions in the summary report table.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there an FDA guidance <sup>6</sup> that is associated with this standard? If yes, was the guidance document followed in preparation of this 510k?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Title of guidance: Required Biocompatibility Training and Toxicology Profiles for Evaluation of Medical Devices		
<small> <sup>1</sup> The formatting convention for the title is: [SDO] [numeric identifier] [title of standard] [date of publication]  <sup>2</sup> Authority [21 U.S.C. 360d], www.fda.gov/cdrh/stdsprog.html  <sup>3</sup> http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm  <sup>4</sup> The summary report should include: any adaptations used to adapt to the device under review (for example, alternative test methods); choices made when options or a selection of methods are described; deviations from the standard; requirements not applicable to the device; and the name and address of the test laboratory or certification body involved in conformance assessment to this standard. The summary report includes information on all standards utilized during the development of the device.  <sup>5</sup> The supplemental information sheet (SIS) is additional information which is necessary before FDA recognizes the standard. Found at http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm  <sup>6</sup> The online search for CDRH Guidance Documents can be found at www.fda.gov/cdrh/guidance.html                     </small>		

<b>EXTENT OF STANDARD CONFORMANCE SUMMARY REPORT TABLE</b>		
STANDARD TITLE ISO/EN 10993-3; 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive		
<b>CONFORMANCE WITH STANDARD SECTIONS*</b>		
SECTION NUMBER 4	SECTION TITLE Genotoxicity Testing	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * In Vitro Chromosomal Aberration in Mammalian Cells, Bacterial Reverse Mutation & Mouse Bone Marrow Micronucleus		
DESCRIPTION DNA effects, gene mutations and chromosomal aberrations - three tests - option is additional testing on failures		
JUSTIFICATION All tests were conducted and passed suggesting no further testing required		
SECTION NUMBER 5	SECTION TITLE Carcinogenicity testing	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * Not applicable		
DESCRIPTION results of tests in section 4 suggest no additional testing required		
JUSTIFICATION All normal results in genotoxicity testing. raw materials have no know carcinogenicity risks.		
SECTION NUMBER 6	SECTION TITLE Reproductive Toxicity tests	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * None selected		
DESCRIPTION These tests for IUDs, contact with reproductive tissue - the device does not meet the criteria for test in this section		
JUSTIFICATION Not applicable per the standard		
<p>* For completeness list all sections of the standard and indicate whether conformance is met. If a section is not applicable (N/A) an explanation is needed under "justification." Some standards include options, so similar to deviations, the option chosen needs to be described and adequately justified as appropriate for the subject device. Explanation of all deviations or description of options selected when following a standard is required under "type of deviation or option selected," "description" and "justification" on the report. More than one page may be necessary.</p> <p>* Types of deviations can include an exclusion of a section in the standard, a deviation brought out by the FDA supplemental information sheet (SIS), a deviation to adapt the standard to the device, or any adaptation of a section.</p>		
<b>Paperwork Reduction Act Statement</b>		
<p>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to:</p> <p style="text-align: center;">Center for Devices and Radiological Health 1350 Piccard Drive Rockville, MD 20850</p> <p style="text-align: center;"><i>An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.</i></p>		

**10.3 FDA 3654 ISO 10993-4**

(not listed in recognized standards – test are in compliance with Tripartite guidance (1997))

Form Approved: OMB No. 0910-0120; Expiration Date: 8/31/10

Department of Health and Human Services Food and Drug Administration <b>STANDARDS DATA REPORT FOR 510(k)s</b> <i>(To be filled in by applicant)</i>		
This report and the Summary Report Table are to be completed by the applicant when submitting a 510(k) that references a national or international standard. A separate report is required for each standard referenced in the 510(k).		
TYPE OF 510(K) SUBMISSION <input checked="" type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated		
STANDARD TITLE <sup>1</sup> ISO/EN 10993-4; 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood. (now 2002)		
<b>Please answer the following questions</b>		
Is this standard recognized by FDA <sup>2</sup> ? .....	Yes	No
FDA Recognition number <sup>3</sup> .....	#	Not Listed
Was a third party laboratory responsible for testing conformity of the device to this standard identified in the 510(k)? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is a summary report <sup>4</sup> describing the extent of conformance of the standard used included in the 510(k)? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If no, complete a summary report table.		
Does the test data for this device demonstrate conformity to the requirements of this standard as it pertains to this device? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does this standard include acceptance criteria? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If no, include the results of testing in the 510(k).		
Does this standard include more than one option or selection of tests? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, report options selected in the summary report table.		
Were there any deviations or adaptations made in the use of the standard? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, were deviations in accordance with the FDA supplemental information sheet (SIS) <sup>5</sup> ? .....	<input type="checkbox"/>	<input type="checkbox"/>
Were deviations or adaptations made beyond what is specified in the FDA SIS? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, report these deviations or adaptations in the summary report table.		
Were there any exclusions from the standard? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, report these exclusions in the summary report table.		
Is there an FDA guidance <sup>6</sup> that is associated with this standard? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, was the guidance document followed in preparation of this 510k? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Title of guidance: Required Biocompatibility Training and Toxicology Profiles for Evaluation of Medical Devices		
<sup>1</sup> The formatting convention for the title is: [SDO] [numeric identifier] [title of standard] [date of publication] <sup>2</sup> Authority [21 U.S.C. 360d], www.fda.gov/cdrh/stdsprog.html <sup>3</sup> http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm <sup>4</sup> The summary report should include: any adaptations used to adapt to the device under review (for example, alternative test methods); choices made when options or a selection of methods are described; deviations from the standard; requirements not applicable to the device; and the name and address of the test laboratory or	certification body involved in conformance assessment to this standard. The summary report includes information on all standards utilized during the development of the device. <sup>5</sup> The supplemental information sheet (SIS) is additional information which is necessary before FDA recognizes the standard. Found at http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm <sup>6</sup> The online search for CDRH Guidance Documents can be found at www.fda.gov/cdrh/guidance.html	

<b>EXTENT OF STANDARD CONFORMANCE SUMMARY REPORT TABLE</b>		
STANDARD TITLE Biological evaluation of medical devices, Part 4: Selection of tests for interactions with blood		
CONFORMANCE WITH STANDARD SECTIONS*		
SECTION NUMBER 6.3	SECTION TITLE Selection of tests	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * Options are 1- 5; Table 5 - Tests for Implant devices was selected		
DESCRIPTION the tables are designed for external contact devices, up to Implant devices		
JUSTIFICATION we selected the most rigorous of the tests in this part, and as per the standard used the table of tests for implant devices.		
SECTION NUMBER	SECTION TITLE	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED *		
DESCRIPTION		
JUSTIFICATION		
SECTION NUMBER	SECTION TITLE	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED *		
DESCRIPTION		
JUSTIFICATION		
SECTION NUMBER	SECTION TITLE	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED *		
DESCRIPTION		
JUSTIFICATION		
<p>* For completeness list all sections of the standard and indicate whether conformance is met. If a section is not applicable (N/A) an explanation is needed under "justification." Some standards include options, so similar to deviations, the option chosen needs to be described and adequately justified as appropriate for the subject device. Explanation of all deviations or description of options selected when following a standard is required under "type of deviation or option selected," "description" and "justification" on the report. More than one page may be necessary.</p> <p>* Types of deviations can include an exclusion of a section in the standard, a deviation brought out by the FDA supplemental information sheet (SIS), a deviation to adapt the standard to the device, or any adaptation of a section.</p>		
<b>Paperwork Reduction Act Statement</b>		
<p>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to:</p> <p style="text-align: center;">Center for Devices and Radiological Health 1350 Piccard Drive Rockville, MD 20850</p> <p style="text-align: center;"><i>An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.</i></p>		

10.4 FDA 3654 ISO 10993-5

Form Approved: OMB No. 0910-0120; Expiration Date: 8/31/10

Department of Health and Human Services Food and Drug Administration <b>STANDARDS DATA REPORT FOR 510(k)s</b> (To be filled in by applicant)		
This report and the Summary Report Table are to be completed by the applicant when submitting a 510(k) that references a national or international standard. A separate report is required for each standard referenced in the 510(k).		
TYPE OF 510(K) SUBMISSION <input checked="" type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated		
STANDARD TITLE <sup>1</sup> ISO 10993-5:1999, Biological evaluation of medical devices -- Part 5: Tests for In Vitro cytotoxicity		
<b>Please answer the following questions</b>		
Is this standard recognized by FDA <sup>2</sup> ?	Yes	No
.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FDA Recognition number <sup>3</sup> .....	# 2-64	
Was a third party laboratory responsible for testing conformity of the device to this standard identified in the 510(k)? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is a summary report <sup>4</sup> describing the extent of conformance of the standard used included in the 510(k)? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If no, complete a summary report table.		
Does the test data for this device demonstrate conformity to the requirements of this standard as it pertains to this device? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does this standard include acceptance criteria? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If no, include the results of testing in the 510(k).		
Does this standard include more than one option or selection of tests? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, report options selected in the summary report table.		
Were there any deviations or adaptations made in the use of the standard? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>
Were deviations or adaptations made beyond what is specified in the FDA SIS? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, report these deviations or adaptations in the summary report table.		
Were there any exclusions from the standard? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, report these exclusions in the summary report table.		
Is there an FDA guidance <sup>6</sup> that is associated with this standard? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, was the guidance document followed in preparation of this 510k? .....		
Title of guidance: <u>Required Biocompatibility Training and Toxicology Profiles for Evaluation of Medical Devices</u>		
<sup>1</sup> The formatting convention for the title is: [SDO] [numeric identifier] [title of standard] [date of publication] <sup>2</sup> Authority [21 U.S.C. 360d], www.fda.gov/cdrh/stdsprog.html <sup>3</sup> http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm <sup>4</sup> The summary report should include: any adaptations used to adapt to the device under review (for example, alternative test methods); choices made when options or a selection of methods are described; deviations from the standard; requirements not applicable to the device; and the name and address of the test laboratory or	certification body involved in conformance assessment to this standard. The summary report includes information on all standards utilized during the development of the device. <sup>5</sup> The supplemental information sheet (SIS) is additional information which is necessary before FDA recognizes the standard. Found at http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm <sup>6</sup> The online search for CDRH Guidance Documents can be found at www.fda.gov/cdrh/guidance.html	

<b>EXTENT OF STANDARD CONFORMANCE SUMMARY REPORT TABLE</b>		
STANDARD TITLE ISO 10993-5:1999, Biological evaluation of medical devices -- Part 5: Tests for In Vitro cytotoxicity		
CONFORMANCE WITH STANDARD SECTIONS*		
SECTION NUMBER 4.1	SECTION TITLE Sample Preparation -> General	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * Extracts only tested on microspheres, solution used as is.		
DESCRIPTION Choice of sample preparation dependant on solid/liquid form		
JUSTIFICATION Solid not possible to test directly		
SECTION NUMBER 4.2.2	SECTION TITLE Extraction Vehicle	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * Culture medium with serum		
DESCRIPTION 4.2.2 a) Culture Medium with serum		
JUSTIFICATION Simulates physiological conditions, most preferable conditions (NAMSA)		
SECTION NUMBER 4.2.3	SECTION TITLE Extraction Conditions	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * 24 hrs and (37 ± 2)°C chosen		
DESCRIPTION Most relevant to test item and placement in body		
JUSTIFICATION Simulates physiological conditions, most preferable conditions (NAMSA). Extract serum cannot be used above 37°C (NAMSA)		
<p>* For completeness list all sections of the standard and indicate whether conformance is met. If a section is not applicable (N/A) an explanation is needed under "justification." Some standards include options, so similar to deviations, the option chosen needs to be described and adequately justified as appropriate for the subject device. Explanation of all deviations or description of options selected when following a standard is required under "type of deviation or option selected," "description" and "justification" on the report. More than one page may be necessary.</p> <p>♦ Types of deviations can include an exclusion of a section in the standard, a deviation brought out by the FDA supplemental information sheet (SIS), a deviation to adapt the standard to the device, or any adaptation of a section.</p>		
<p><b>Paperwork Reduction Act Statement</b></p> <p>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to:</p> <p style="text-align: center;">Center for Devices and Radiological Health 1350 Piccard Drive Rockville, MD 20850</p> <p style="text-align: center;"><i>An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.</i></p>		

10.5 FDA 3654 ISO 10993-6

Form Approved: OMB No. 0910-0120; Expiration Date: 8/31/10

Department of Health and Human Services Food and Drug Administration <b>STANDARDS DATA REPORT FOR 510(k)s</b> <i>(To be filled in by applicant)</i>		
This report and the Summary Report Table are to be completed by the applicant when submitting a 510(k) that references a national or international standard. A separate report is required for each standard referenced in the 510(k).		
TYPE OF 510(K) SUBMISSION <input checked="" type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated		
STANDARD TITLE <sup>1</sup> ISO/EN 10993-6; 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation. (now 2007)		
<b>Please answer the following questions</b>		
Is this standard recognized by FDA <sup>2</sup> ? .....	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
FDA Recognition number <sup>3</sup> .....	# 2-120 (2007)	
Was a third party laboratory responsible for testing conformity of the device to this standard identified in the 510(k)? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is a summary report <sup>4</sup> describing the extent of conformance of the standard used included in the 510(k)? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If no, complete a summary report table.		
Does the test data for this device demonstrate conformity to the requirements of this standard as it pertains to this device? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does this standard include acceptance criteria? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If no, include the results of testing in the 510(k).		
Does this standard include more than one option or selection of tests? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, report options selected in the summary report table.		
Were there any deviations or adaptations made in the use of the standard? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, were deviations in accordance with the FDA supplemental information sheet (SIS) <sup>5</sup> ? .....	<input type="checkbox"/>	<input type="checkbox"/>
Were deviations or adaptations made beyond what is specified in the FDA SIS? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, report these deviations or adaptations in the summary report table.		
Were there any exclusions from the standard? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, report these exclusions in the summary report table.		
Is there an FDA guidance <sup>6</sup> that is associated with this standard? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, was the guidance document followed in preparation of this 510k? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Title of guidance: <u>Required Biocompatibility Training and Toxicology Profiles for Evaluation of Medical Devices</u>		
<sup>1</sup> The formatting convention for the title is: [SDO] [numeric identifier] [title of standard] [date of publication]	certification body involved in conformance assessment to this standard. The summary report includes information on all standards utilized during the development of the device.	
<sup>2</sup> Authority [21 U.S.C. 360d], <a href="http://www.fda.gov/cdrh/stdsprog.html">www.fda.gov/cdrh/stdsprog.html</a>	<sup>5</sup> The supplemental information sheet (SIS) is additional information which is necessary before FDA recognizes the standard. Found at <a href="http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm">http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm</a>	
<sup>3</sup> <a href="http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm">http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm</a>	<sup>6</sup> The online search for CDRH Guidance Documents can be found at <a href="http://www.fda.gov/cdrh/guidance.html">www.fda.gov/cdrh/guidance.html</a>	
<sup>4</sup> The summary report should include: any adaptations used to adapt to the device under review (for example, alternative test methods); choices made when options or a selection of methods are described; deviations from the standard; requirements not applicable to the device; and the name and address of the test laboratory or		

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Page 1

FSC Graphics (303) 443-1898 EF

EXTENT OF STANDARD CONFORMANCE SUMMARY REPORT TABLE		
STANDARD TITLE ISO/EN 10993-6; 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.		
CONFORMANCE WITH STANDARD SECTIONS*		
SECTION NUMBER 5.3	SECTION TITLE Test Periods	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * Rabbit 2 weeks, Rabbit 26 week muscle implantations , Rat 13 week subcutaneous implantation		
DESCRIPTION Choice of timepoints based on text.		
JUSTIFICATION Rat and rabbit chosen as standard species for evaluating polymer materials (NAMSA Justification)		
SECTION NUMBER 5.4	SECTION TITLE Surgery and Testing conditions	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * Muscle implantation (Appendix C) and subcutaneous (Appendix B)		
DESCRIPTION Choice of type of implant		
JUSTIFICATION NAMSA Justification, Rabbit Muscle implant for Polymers, Rat subcutaneous toxicity data		
SECTION NUMBER	SECTION TITLE	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED *		
DESCRIPTION		
JUSTIFICATION		
<p>* For completeness list all sections of the standard and indicate whether conformance is met. If a section is not applicable (N/A) an explanation is needed under "justification." Some standards include options, so similar to deviations, the option chosen needs to be described and adequately justified as appropriate for the subject device. Explanation of all deviations or description of options selected when following a standard is required under "type of deviation or option selected," "description" and "justification" on the report. More than one page may be necessary.</p> <p>* Types of deviations can include an exclusion of a section in the standard, a deviation brought out by the FDA supplemental information sheet (SIG), a deviation to adapt the standard to the device, or any adaptation of a section.</p>		
<p><b>Paperwork Reduction Act Statement</b></p> <p>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to:</p> <p style="text-align: center;">Center for Devices and Radiological Health 1350 Piccard Drive Rockville, MD 20850</p> <p style="text-align: center;"><i>An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.</i></p>		

10.6 FDA 3654 ISO 10993-10

Form Approved: OMB No. 0910-0120; Expiration Date: 8/31/10

Department of Health and Human Services Food and Drug Administration <b>STANDARDS DATA REPORT FOR 510(k)s</b> <i>(To be filled in by applicant)</i>		
This report and the Summary Report Table are to be completed by the applicant when submitting a 510(k) that references a national or international standard. A separate report is required for each standard referenced in the 510(k).		
TYPE OF 510(K) SUBMISSION <input checked="" type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated		
STANDARD TITLE <sup>1</sup> ISO/EN 10993-10; 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization. (updated 2002)		
<b>Please answer the following questions</b>		
Is this standard recognized by FDA <sup>2</sup> ?	Yes	No
.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FDA Recognition number <sup>3</sup> .....	# 2-87 (2002)	
Was a third party laboratory responsible for testing conformity of the device to this standard identified in the 510(k)? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is a summary report <sup>4</sup> describing the extent of conformance of the standard used included in the 510(k)? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If no, complete a summary report table.		
Does the test data for this device demonstrate conformity to the requirements of this standard as it pertains to this device? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does this standard include acceptance criteria? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If no, include the results of testing in the 510(k).		
Does this standard include more than one option or selection of tests? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, report options selected in the summary report table.		
Were there any deviations or adaptations made in the use of the standard? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, were deviations in accordance with the FDA supplemental information sheet (SIS) <sup>5</sup> ? .....	<input type="checkbox"/>	<input type="checkbox"/>
Were deviations or adaptations made beyond what is specified in the FDA SIS? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, report these deviations or adaptations in the summary report table.		
Were there any exclusions from the standard? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, report these exclusions in the summary report table.		
Is there an FDA guidance <sup>6</sup> that is associated with this standard? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, was the guidance document followed in preparation of this 510k? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Title of guidance: Required Biocompatibility Training and Toxicology Profiles for Evaluation of Medical Devices		
<small> <sup>1</sup> The formatting convention for the title is: [SDO] [numeric identifier] [title of standard] [date of publication]  <sup>2</sup> Authority [21 U.S.C. 360d], www.fda.gov/cdrh/sldsprog.html  <sup>3</sup> http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm  <sup>4</sup> The summary report should include: any adaptations used to adapt to the device under review (for example, alternative test methods); choices made when options or a selection of methods are described; deviations from the standard; requirements not applicable to the device; and the name and address of the test laboratory or certification body involved in conformance assessment to this standard. The summary report includes information on all standards utilized during the development of the device.  <sup>5</sup> The supplemental information sheet (SIS) is additional information which is necessary before FDA recognizes the standard. Found at http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm  <sup>6</sup> The online search for CDRH Guidance Documents can be found at www.fda.gov/cdrh/guidance.html                     </small>		

<b>EXTENT OF STANDARD CONFORMANCE SUMMARY REPORT TABLE</b>		
STANDARD TITLE ISO/EN 10993-10; 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization. (updated 2002)		
<b>CONFORMANCE WITH STANDARD SECTIONS*</b>		
SECTION NUMBER 6.4	SECTION TITLE Human Skin Irritation test	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * Not carried out on human subjects		
DESCRIPTION Human exposure		
JUSTIFICATION Human exposure considered to be very low due to device nature.		
SECTION NUMBER 7	SECTION TITLE Delayed Hypersensitivity Tests	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * Not carried out		
DESCRIPTION Single chemical skin sensitization potential		
JUSTIFICATION Implanted device, adverse effects evaluated through subcutaneous and long term implantations.		
SECTION NUMBER	SECTION TITLE	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED *		
DESCRIPTION		
JUSTIFICATION		
<p>* For completeness list all sections of the standard and indicate whether conformance is met. If a section is not applicable (N/A) an explanation is needed under "justification." Some standards include options, so similar to deviations, the option chosen needs to be described and adequately justified as appropriate for the subject device. Explanation of all deviations or description of options selected when following a standard is required under "type of deviation or option selected," "description" and "justification" on the report. More than one page may be necessary.</p> <p>♦ Types of deviations can include an exclusion of a section in the standard, a deviation brought out by the FDA supplemental information sheet (SIS), a deviation to adapt the standard to the device, or any adaptation of a section.</p>		
<b>Paperwork Reduction Act Statement</b>		
<p>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to:</p> <p style="text-align: center;">Center for Devices and Radiological Health 1350 Piccard Drive Rockville, MD 20850</p> <p style="text-align: center;"><i>An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.</i></p>		

10.7 FDA 3654 ISO 10993-11

Form Approved: OMB No. 0910-0120; Expiration Date: 8/31/10

Department of Health and Human Services Food and Drug Administration <b>STANDARDS DATA REPORT FOR 510(k)s</b> <i>(To be filled in by applicant)</i>		
This report and the Summary Report Table are to be completed by the applicant when submitting a 510(k) that references a national or international standard. A separate report is required for each standard referenced in the 510(k).		
TYPE OF 510(K) SUBMISSION <input checked="" type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated		
STANDARD TITLE <sup>1</sup> ISO/EN 10993-11; 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity (updated 2006)		
<b>Please answer the following questions</b>		
Is this standard recognized by FDA <sup>2</sup> ?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
FDA Recognition number <sup>3</sup>	# 2-18 (2006)	
Was a third party laboratory responsible for testing conformity of the device to this standard identified in the 510(k)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Is a summary report <sup>4</sup> describing the extent of conformance of the standard used included in the 510(k)? If no, complete a summary report table.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Does the test data for this device demonstrate conformity to the requirements of this standard as it pertains to this device?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Does this standard include acceptance criteria? If no, include the results of testing in the 510(k).	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Does this standard include more than one option or selection of tests? If yes, report options selected in the summary report table.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Were there any deviations or adaptations made in the use of the standard? If yes, were deviations in accordance with the FDA supplemental information sheet (SIS) <sup>5</sup> ?	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>
Were deviations or adaptations made beyond what is specified in the FDA SIS? If yes, report these deviations or adaptations in the summary report table.	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>
Were there any exclusions from the standard? If yes, report these exclusions in the summary report table.	No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>
Is there an FDA guidance <sup>6</sup> that is associated with this standard? If yes, was the guidance document followed in preparation of this 510k?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Title of guidance: <u>Required Biocompatibility Training and Toxicology Profiles for Evaluation of Medical Devices</u>		
<sup>1</sup> The formatting convention for the title is: [SDO] [numeric identifier] [title of standard] [date of publication] <sup>2</sup> Authority [21 U.S.C. 360d], www.fda.gov/cdrh/stdsprog.html <sup>3</sup> http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm <sup>4</sup> The summary report should include: any adaptations used to adapt to the device under review (for example, alternative test methods); choices made when options or a selection of methods are described; deviations from the standard; requirements not applicable to the device; and the name and address of the test laboratory or certification body involved in conformance assessment to this standard. The summary report includes information on all standards utilized during the development of the device. <sup>5</sup> The supplemental information sheet (SIS) is additional information which is necessary before FDA recognizes the standard. Found at http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm <sup>6</sup> The online search for CDRH Guidance Documents can be found at www.fda.gov/cdrh/guidance.html		

EXTENT OF STANDARD CONFORMANCE SUMMARY REPORT TABLE		
STANDARD TITLE ISO/EN 10993-11; 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity (updated 2006)		
CONFORMANCE WITH STANDARD SECTIONS*		
SECTION NUMBER 4.2	SECTION TITLE Selection of Animal Species	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * Rat and Mouse models chosen		
DESCRIPTION Choice of animals		
JUSTIFICATION Mouse and Rat preferred species for IV/IP (NAMSA and Standard)		
SECTION NUMBER 4.5.1	SECTION TITLE Size of Groups	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * Subchronic Rat: 10 of each sex. Acute Mouse: 5 IP & 5 IV routes single sex		
DESCRIPTION Choice of numbers and sex		
JUSTIFICATION As per standard Table 1		
SECTION NUMBER 6	SECTION TITLE Repeated Exposure	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED * Not Carried out		
DESCRIPTION Repeated dose studies		
JUSTIFICATION 13 week chronic toxicity carried out following subcutaneous implantation as device is an implant.		
<p>* For completeness list all sections of the standard and indicate whether conformance is met. If a section is not applicable (N/A) an explanation is needed under "justification." Some standards include options, so similar to deviations, the option chosen needs to be described and adequately justified as appropriate for the subject device. Explanation of all deviations or description of options selected when following a standard is required under "type of deviation or option selected," "description" and "justification" on the report. More than one page may be necessary.</p> <p>* Types of deviations can include an exclusion of a section in the standard, a deviation brought out by the FDA supplemental information sheet (SIS), a deviation to adapt the standard to the device, or any adaptation of a section.</p>		
Paperwork Reduction Act Statement		
<p>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to:</p> <p style="text-align: center;">Center for Devices and Radiological Health 1350 Piccard Drive Rockville, MD 20850</p> <p><i>An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.</i></p>		

10.8 FDA 3654 ISO 11607

Form Approved: OMB No. 0910-0120; Expiration Date: 8/31/10

Department of Health and Human Services Food and Drug Administration <b>STANDARDS DATA REPORT FOR 510(k)s</b> (To be filled in by applicant)	
This report and the Summary Report Table are to be completed by the applicant when submitting a 510(k) that references a national or international standard. A separate report is required for each standard referenced in the 510(k).	
TYPE OF 510(K) SUBMISSION <input checked="" type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated	
STANDARD TITLE <sup>1</sup> SO 11607-1:2003, Packaging for terminally sterilized medical devices (updated 2006)	
<b>Please answer the following questions</b>	
Is this standard recognized by FDA <sup>2</sup> ? .....	Yes    No <input checked="" type="checkbox"/> <input type="checkbox"/>
FDA Recognition number <sup>3</sup> .....	# 14-193
Was a third party laboratory responsible for testing conformity of the device to this standard identified in the 510(k)? .....	<input checked="" type="checkbox"/> <input type="checkbox"/>
Is a summary report <sup>4</sup> describing the extent of conformance of the standard used included in the 510(k)? ..... If no, complete a summary report table.	<input checked="" type="checkbox"/> <input type="checkbox"/>
Does the test data for this device demonstrate conformity to the requirements of this standard as it pertains to this device? .....	<input checked="" type="checkbox"/> <input type="checkbox"/>
Does this standard include acceptance criteria? ..... If no, include the results of testing in the 510(k).	<input checked="" type="checkbox"/> <input type="checkbox"/>
Does this standard include more than one option or selection of tests? ..... If yes, report options selected in the summary report table.	<input type="checkbox"/> <input checked="" type="checkbox"/>
Were there any deviations or adaptations made in the use of the standard? ..... If yes, were deviations in accordance with the FDA supplemental information sheet (SIS) <sup>5</sup> ? .....	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Were deviations or adaptations made beyond what is specified in the FDA SIS? ..... If yes, report these deviations or adaptations in the summary report table.	<input type="checkbox"/> <input checked="" type="checkbox"/>
Were there any exclusions from the standard? ..... If yes, report these exclusions in the summary report table.	<input type="checkbox"/> <input checked="" type="checkbox"/>
Is there an FDA guidance <sup>6</sup> that is associated with this standard? ..... If yes, was the guidance document followed in preparation of this 510k? .....	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Title of guidance: <u>Premarket notification [510(k)] submissions for medical sterilization packaging systems in health care fac</u>	
<p><sup>1</sup> The formatting convention for the title is: [SDO] [numeric identifier] [title of standard] [date of publication]</p> <p><sup>2</sup> Authority [21 U.S.C. 360d]. <a href="http://www.fda.gov/cdrh/stdsprog.html">www.fda.gov/cdrh/stdsprog.html</a></p> <p><sup>3</sup> <a href="http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm">http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm</a></p> <p><sup>4</sup> The summary report should include: any adaptations used to adapt to the device under review (for example, alternative test methods); choices made when options or a selection of methods are described; deviations from the standard; requirements not applicable to the device; and the name and address of the test laboratory or</p>	<p>certification body involved in conformance assessment to this standard. The summary report includes information on all standards utilized during the development of the device.</p> <p><sup>5</sup> The supplemental information sheet (SIS) is additional information which is necessary before FDA recognizes the standard. Found at <a href="http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm">http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm</a></p> <p><sup>6</sup> The online search for CDRH Guidance Documents can be found at <a href="http://www.fda.gov/cdrh/guidance.html">www.fda.gov/cdrh/guidance.html</a></p>

**10.9 FDA 3654 AAMI 11134**

(note – at the time of original 510K filings, AAMI 11134 was a recognized standard. It was removed from the list assumed to be pending recognition of new standard. The device was certified to conform to the recognized standards in effect at the time of filing. All new validations conform to the appropriate ISO standard in effect at the time of validation)

Form Approved: OMB No. 0910-0120; Expiration Date: 8/31/10

Department of Health and Human Services Food and Drug Administration <b>STANDARDS DATA REPORT FOR 510(k)s</b> (To be filled in by applicant)	
This report and the Summary Report Table are to be completed by the applicant when submitting a 510(k) that references a national or international standard. A separate report is required for each standard referenced in the 510(k).	
TYPE OF 510(K) SUBMISSION <input checked="" type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated	
STANDARD TITLE <sup>1</sup> ISO11134; 1993 – Sterilization of Health Care Products – Requirements for validation and routine control (updated ISO 17665-1)	
<b>Please answer the following questions</b>	
	Yes      No
Is this standard recognized by FDA <sup>2</sup> ? .....	<input type="checkbox"/> <input checked="" type="checkbox"/>
FDA Recognition number <sup>3</sup> .....	# (removed 9/08)
Was a third party laboratory responsible for testing conformity of the device to this standard identified in the 510(k)? .....	<input checked="" type="checkbox"/> <input type="checkbox"/>
Is a summary report <sup>4</sup> describing the extent of conformance of the standard used included in the 510(k)? .....	<input checked="" type="checkbox"/> <input type="checkbox"/>
If no, complete a summary report table.	
Does the test data for this device demonstrate conformity to the requirements of this standard as it pertains to this device? .....	<input checked="" type="checkbox"/> <input type="checkbox"/>
Does this standard include acceptance criteria? .....	<input checked="" type="checkbox"/> <input type="checkbox"/>
If no, include the results of testing in the 510(k).	
Does this standard include more than one option or selection of tests? .....	<input type="checkbox"/> <input checked="" type="checkbox"/>
If yes, report options selected in the summary report table.	
Were there any deviations or adaptations made in the use of the standard? .....	<input type="checkbox"/> <input checked="" type="checkbox"/>
If yes, were deviations in accordance with the FDA supplemental information sheet (SIS) <sup>5</sup> ? .....	<input type="checkbox"/> <input type="checkbox"/>
Were deviations or adaptations made beyond what is specified in the FDA SIS? .....	<input type="checkbox"/> <input type="checkbox"/>
If yes, report these deviations or adaptations in the summary report table.	
Were there any exclusions from the standard? .....	<input type="checkbox"/> <input checked="" type="checkbox"/>
If yes, report these exclusions in the summary report table.	
Is there an FDA guidance <sup>6</sup> that is associated with this standard? .....	<input type="checkbox"/> <input checked="" type="checkbox"/>
If yes, was the guidance document followed in preparation of this 510k? .....	<input type="checkbox"/> <input type="checkbox"/>
Title of guidance: _____	
<sup>1</sup> The formatting convention for the title is: [SDO] [numeric identifier] [title of standard] [date of publication] <sup>2</sup> Authority [21 U.S.C. 360d], www.fda.gov/cdrh/stds/prog.html <sup>3</sup> http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm <sup>4</sup> The summary report should include: any adaptations used to adapt to the device under review (for example, alternative test methods); choices made when options or a selection of methods are described; deviations from the standard; requirements not applicable to the device; and the name and address of the test laboratory or	certification body involved in conformance assessment to this standard. The summary report includes information on all standards utilized during the development of the device. <sup>5</sup> The supplemental information sheet (SIS) is additional information which is necessary before FDA recognizes the standard. Found at http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm <sup>6</sup> The online search for CDRH Guidance Documents can be found at www.fda.gov/cdrh/guidance.html

EXTENT OF STANDARD CONFORMANCE SUMMARY REPORT TABLE		
STANDARD TITLE ISO11134; 1993 – Sterilization of Health Care Products – Requirements for validation and routine control (updated ISO 17665-1)		
<b>CONFORMANCE WITH STANDARD SECTIONS*</b>		
SECTION NUMBER n/a	SECTION TITLE n/a	CONFORMANCE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED ♦ Full Validation		
DESCRIPTION Full Validation		
JUSTIFICATION K042331 carries full sterilization report.		
SECTION NUMBER	SECTION TITLE	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED ♦		
DESCRIPTION		
JUSTIFICATION		
SECTION NUMBER	SECTION TITLE	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED ♦		
DESCRIPTION		
JUSTIFICATION		
SECTION NUMBER	SECTION TITLE	CONFORMANCE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
TYPE OF DEVIATION OR OPTION SELECTED ♦		
DESCRIPTION		
JUSTIFICATION		
<p>* For completeness list all sections of the standard and indicate whether conformance is met. If a section is not applicable (N/A) an explanation is needed under "justification." Some standards include options, so similar to deviations, the option chosen needs to be described and adequately justified as appropriate for the subject device. Explanation of all deviations or description of options selected when following a standard is required under "type of deviation or option selected," "description" and "justification" on the report. More than one page may be necessary.</p> <p>♦ Types of deviations can include an exclusion of a section in the standard, a deviation brought out by the FDA supplemental information sheet (SIS), a deviation to adapt the standard to the device, or any adaptation of a section.</p>		
<b>Paperwork Reduction Act Statement</b>		
<p>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to:</p> <p style="text-align: center;">Center for Devices and Radiological Health 1350 Piccard Drive Rockville, MD 20850</p> <p style="text-align: center;"><i>An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.</i></p>		

10.10 FDA 3654 ANSI/AAMI/ISO 14937

Form Approved: OMB No. 0910-0120; Expiration Date: 8/31/10

Department of Health and Human Services Food and Drug Administration <b>STANDARDS DATA REPORT FOR 510(k)s</b> <i>(To be filled in by applicant)</i>	
This report and the Summary Report Table are to be completed by the applicant when submitting a 510(k) that references a national or international standard. A separate report is required for each standard referenced in the 510(k).	
TYPE OF 510(K) SUBMISSION <input checked="" type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated	
STANDARD TITLE <sup>1</sup> AAMI / ANSI / ISO 14937:2000, Sterilization of Health Care Products - General Requirements for Characterization of a Sterilizin	
<b>Please answer the following questions</b> <span style="float: right;">Yes    No</span>	
Is this standard recognized by FDA <sup>2</sup> ?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
FDA Recognition number <sup>3</sup>	# 14-88
Was a third party laboratory responsible for testing conformity of the device to this standard identified in the 510(k)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Is a summary report <sup>4</sup> describing the extent of conformance of the standard used included in the 510(k)? If no, complete a summary report table.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Does the test data for this device demonstrate conformity to the requirements of this standard as it pertains to this device?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Does this standard include acceptance criteria? If no, include the results of testing in the 510(k).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Does this standard include more than one option or selection of tests? If yes, report options selected in the summary report table.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Were there any deviations or adaptations made in the use of the standard? If yes, were deviations in accordance with the FDA supplemental information sheet (SIS) <sup>5</sup> ?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Were deviations or adaptations made beyond what is specified in the FDA SIS? If yes, report these deviations or adaptations in the summary report table.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Were there any exclusions from the standard? If yes, report these exclusions in the summary report table.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Is there an FDA guidance <sup>6</sup> that is associated with this standard? If yes, was the guidance document followed in preparation of this 510k?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Title of guidance: _____	
<sup>1</sup> The formatting convention for the title is: [SDO] [numeric identifier] [title of standard] [date of publication] <sup>2</sup> Authority [21 U.S.C. 360d], www.fda.gov/cdrh/stdsprog.html <sup>3</sup> http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm <sup>4</sup> The summary report should include: any adaptations used to adapt to the device under review (for example, alternative test methods); choices made when options or a selection of methods are described; deviations from the standard; requirements not applicable to the device; and the name and address of the test laboratory or	certification body involved in conformance assessment to this standard. The summary report includes information on all standards utilized during the development of the device. <sup>5</sup> The supplemental information sheet (SIS) is additional information which is necessary before FDA recognizes the standard. Found at http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm <sup>6</sup> The online search for CDRH Guidance Documents can be found at www.fda.gov/cdrh/guidance.html

10.11 FDA 3654 ISO 14971

Form Approved: OMB No. 0910-0120; Expiration Date: 8/31/10

Department of Health and Human Services Food and Drug Administration <b>STANDARDS DATA REPORT FOR 510(k)s</b> <i>(To be filled in by applicant)</i>		
This report and the Summary Report Table are to be completed by the applicant when submitting a 510(k) that references a national or international standard. A separate report is required for each standard referenced in the 510(k).		
TYPE OF 510(K) SUBMISSION <input checked="" type="checkbox"/> Traditional <input type="checkbox"/> Special <input type="checkbox"/> Abbreviated		
STANDARD TITLE <sup>1</sup> ISO 14971 Medical devices - Application of risk management to medical devices. (Updated 2007)		
<b>Please answer the following questions</b>		
Is this standard recognized by FDA <sup>2</sup> ? .....	Yes	No
.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FDA Recognition number <sup>3</sup> .....	# 5-40	
Was a third party laboratory responsible for testing conformity of the device to this standard identified in the 510(k)? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is a summary report <sup>4</sup> describing the extent of conformance of the standard used included in the 510(k)? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If no, complete a summary report table.		
Does the test data for this device demonstrate conformity to the requirements of this standard as it pertains to this device? .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does this standard include acceptance criteria? .....	<input type="checkbox"/>	<input type="checkbox"/>
If no, include the results of testing in the 510(k).		
Does this standard include more than one option or selection of tests? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, report options selected in the summary report table.		
Were there any deviations or adaptations made in the use of the standard? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, were deviations in accordance with the FDA supplemental information sheet (SIS) <sup>5</sup> ? .....	<input type="checkbox"/>	<input type="checkbox"/>
Were deviations or adaptations made beyond what is specified in the FDA SIS? .....	<input type="checkbox"/>	<input type="checkbox"/>
If yes, report these deviations or adaptations in the summary report table.		
Were there any exclusions from the standard? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, report these exclusions in the summary report table.		
Is there an FDA guidance <sup>6</sup> that is associated with this standard? .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, was the guidance document followed in preparation of this 510(k)? .....	<input type="checkbox"/>	<input type="checkbox"/>
Title of guidance: _____		
<sup>1</sup> The formatting convention for the title is: [SDO] [numeric identifier] [title of standard] [date of publication] <sup>2</sup> Authority [21 U.S.C. 360d], <a href="http://www.fda.gov/cdrh/stdsprog.html">www.fda.gov/cdrh/stdsprog.html</a> <sup>3</sup> <a href="http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm">http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm</a> <sup>4</sup> The summary report should include: any adaptations used to adapt to the device under review (for example, alternative test methods); choices made when options or a selection of methods are described; deviations from the standard; requirements not applicable to the device; and the name and address of the test laboratory or	certification body involved in conformance assessment to this standard. The summary report includes information on all standards utilized during the development of the device. <sup>5</sup> The supplemental information sheet (SIS) is additional information which is necessary before FDA recognizes the standard. Found at <a href="http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm">http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm</a> <sup>6</sup> The online search for CDRH Guidance Documents can be found at <a href="http://www.fda.gov/cdrh/guidance.html">www.fda.gov/cdrh/guidance.html</a>	



### COVER SHEET MEMORANDUM

From: Reviewer Name  
Subject: 510(k) Number  
To: The Record

ADoyle GRANTT  
K083091

Please list CTS decision code SE

- Refused to accept (Note: this is considered the first review cycle. See Screening Checklist. [http://eroom.fda.gov/eRoomReq/Files/CDRH3/CDRHPreMarketNotification510kProgram/0\\_5631/Screening%20Checklist%207.202%2007.doc](http://eroom.fda.gov/eRoomReq/Files/CDRH3/CDRHPreMarketNotification510kProgram/0_5631/Screening%20Checklist%207.202%2007.doc))
- Hold (Additional Information or Telephone Hold):
- Final Decision (SE, SE with Limitations, NSE, Withdrawn, etc.).

Please complete the following for a final clearance decision (i.e., SE, SE with Limitations, etc.):		YES	NO
Indications for Use Page	Attach IFU	<input checked="" type="checkbox"/>	<input type="checkbox"/>
510(k) Summary / 510(k) Statement	Attach Summary	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Truthful and Accurate Statement.	Must be present for a Final Decision	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the device Class III?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, does firm include Class III Summary?	Must be present for a Final Decision	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does firm reference standards? (If yes, please attach form from <a href="http://www.fda.gov/opacom/morechoices/fdaforms/FDA-3654.pdf">http://www.fda.gov/opacom/morechoices/fdaforms/FDA-3654.pdf</a> )		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is this a combination product? (Please specify category <u>N</u> , see <a href="http://eroom.fda.gov/eRoomReq/Files/CDRH3/CDRHPreMarketNotification510kProgram/0_413b/COMBINATION%20PRODUCT%20ALGORITHM%20(REVISED%203-12-03).DOC">http://eroom.fda.gov/eRoomReq/Files/CDRH3/CDRHPreMarketNotification510kProgram/0_413b/COMBINATION%20PRODUCT%20ALGORITHM%20(REVISED%203-12-03).DOC</a> )		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is this a reprocessed single use device? (Guidance for Industry and FDA Staff - MDUFMA - Validation Data in 510(k)s for Reprocessed Single-Use Medical Devices, <a href="http://www.fda.gov/cdrh/ode/guidance/1216.html">http://www.fda.gov/cdrh/ode/guidance/1216.html</a> )		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is this device intended for pediatric use only?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is this a prescription device? (If both prescription & OTC, check both boxes.)		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Is clinical data necessary to support the review of this 510(k)? Did the application include a completed FORM FDA 3674, Certification with Requirements of ClinicalTrials.gov Data Bank? (If not, then applicant must be contacted to obtain completed form.)		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does this device include an Animal Tissue Source?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
All Pediatric Patients age <= 21		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Neonate/Newborn (Birth to 28 days)		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Infant (29 days - < 2 years old)		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Child (2 years - < 12 years old)		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Adolescent (12 years - < 18 years old)		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Transitional Adolescent A (18 - < 21 years old) Special considerations are being given to this group, different from adults age >= 21. (different device design or testing, different protocol procedures, etc.)		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Transitional Adolescent B (18 - <= 21; No special considerations compared to adults => 21 years old)		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Nanotechnology		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Rev. 7/2/07

Is this device subject to Section 522 Postmarket Surveillance? (Postmarket Surveillance Guidance, <a href="http://www.fda.gov/cdrh/osb/guidance/316.html">http://www.fda.gov/cdrh/osb/guidance/316.html</a> )	Contact OSB.	<input checked="" type="checkbox"/>
Is this device subject to the Tracking Regulation? (Medical Device Tracking Guidance, <a href="http://www.fda.gov/cdrh/comp/guidance/169.html">http://www.fda.gov/cdrh/comp/guidance/169.html</a> )	Contact OC.	<input checked="" type="checkbox"/>

Regulation Number: 870.3300 Class\*: II Product Code: KRI  
Vascular Embolization Device (unclassified, see 502(k) Staff)

Additional Product Codes: HGG

Review: [Signature] (Branch Chief) PURB (Branch Code) 12/22/09 (Date)

Final Review: [Signature] (Division Director) to Bzuderman (Date) 12/24/09



delivered through typical microcatheters in the 1.8-5Fr range.

LC Bead Microspheres are supplied sterile and packaged in sealed glass vials. Bead Block™ Compressible Microspheres is supplied sterile and packaged in a polycarbonate syringe. Two quantities will be available in a vial: (1) 1.0 mL LC Bead /Bead Block™ Compressible Microspheres in sterile physiologic buffered saline (PBS) to a volume of 8mL, and (2) 2.0mL LC Bead/Bead Block™ Compressible Microspheres in sterile PBS to a volume of 8 mL. LC Bead and Bead Block Compressible Microspheres are supplied in several unit sizes covering the range from 100µm to 1200µm diameter. At the time of use, LC Bead/Bead Block™ Compressible Microspheres is mixed with a nonionic contrast agent, e.g. Omnipaque, to make a 30-50% by weight solution. The bolus of contrast agent elutes from the vascular bed to leave a radiolucent, embolized vessel.

**A. Intended Use /Indications for Use:** See Indications for Use statements described above.

**B. Summary :**

Life-supporting or life-sustaining?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Implant?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Sterile?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Single use?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Prescription use?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Home use or portable?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Drug or biological combination product?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Kit? identified components, ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Software driven?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Electrically Operated?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

**C. Materials / Biocompatibility:** No changes from predicate. Extensive biocompatibility testing has been provided in predicate submissions.

**D. Design/Specifications:** See description of the product characteristics noted above.

**E. Sterilization:** No change to the process. (b)(4)

(b)(4)

**F. Labeling:** Provided and is identical to labeling reviewed in predicate submissions.

**G. Performance Testing:** Extensive performance testing was provided in predicate submissions.

**H. Clinical Testing:** Not applicable.

**I. Animal Testing:** Extensive animal studies were provided in the predicate submission.

**J. Certifications / Statements / Standards Met:**

510(k) Summary	-	yes
Truthful and Accurate Statement	-	yes
Indications for Use	-	yes

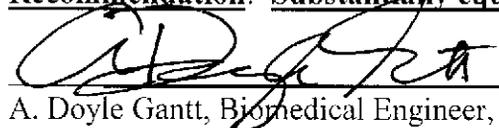
**K. Predicate Devices:**

LC Bead and Bead Block™ is substantially equivalent to:

- LC Bead Microspheres (formerly GelSpheres) BioCure, Inc, (K023089)
- LC Bead Microspheres & Bead Block™ Compressible Microspheres Biocompatibles UK Ltd. (K033761)
- Bead Block™ Compressible Microspheres & LC Bead Microspheres Biocompatibles UK Ltd. (K042231)

**Substantial Equivalence:** The file as presented is substantially equivalent. See attached review addendum.

**Recommendation:** Substantially equivalent.

 12/22/08

A. Doyle Gantt, Biomedical Engineer, PVDB.

**CONCURRENCE / NON-CONCURRENCE BY BRANCH CHIEF:**

 12/22/08

Kenneth J. Cavanaugh, Ph.D. Acting Chief, Peripheral Vascular Devices Branch

 12/24/08

**To: K083091 – LC Bead/Bead Block™ Compressible Microspheres**

**From: A. Doyle Gantt, Biomedical Engineer, DCD, PVDB**

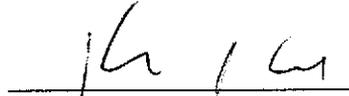


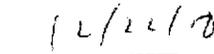
**Subject: Team Leader Review and addendum to K083091 Review**

**Date: December 22, 2008**

This submission is a request to include the KRD product code on the firm's previously cleared product. This product was cleared by Peter Hudson, Ph.D. and David Krause under the neurovascular artificial embolization product code, HCG. The indications for use and the product itself remains the same. I contacted the firm's official correspondent, John Greenbaum and he confirmed that the product is identical and has not been modified. Attached to this review is Peter Hudson's review of the previous 510K which is applicable to this submission. I concur with Dr. Hudson's review and recommend that this product be cleared as substantially equivalent with the KRD product code.

**RECOMMENDATION Substantially Equivalent**

  
\_\_\_\_\_  
Supervisor signature

  
\_\_\_\_\_  
Date

REVISED:3/14/95

THE 510(K) DOCUMENTATION FORMS ARE AVAILABLE ON THE LAN UNDER 510(K) BOILERPLATES TITLED "DOCUMENTATION" AND MUST BE FILLED OUT WITH EVERY FINAL DECISION (SE, NSE, NOT A DEVICE, ETC.).

"SUBSTANTIAL EQUIVALENCE" (SE) DECISION MAKING DOCUMENTATION

Reviewer: *McHudn* K 042231

Division/Branch: *DEAND IPRSB*

Device Name: *Telephone Microphone & Bead Block M.*

Product To Which Compared (510(K) Number If Known): *K033761*

	YES	NO	
1. Is Product A Device	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If NO = Stop
2. Is Device Subject To 510(k)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If NO = Stop
3. Same Indication Statement?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If YES = Go To 5
4. Do Differences Alter The Effect Or Raise New Issues of Safety Or Effectiveness?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If YES = Stop NE
5. Same Technological Characteristics?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If YES = Go To 7
6. Could The New Characteristics Affect Safety Or Effectiveness?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If YES = Go To 8
7. Descriptive Characteristics Precise Enough?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If NO = Go To 10 If YES = Stop SE
8. New Types Of Safety Or Effectiveness Questions?	<input type="checkbox"/>	<input type="checkbox"/>	If YES = Stop NE
9. Accepted Scientific Methods Exist?	<input type="checkbox"/>	<input type="checkbox"/>	If NO = Stop NE
10. Performance Data Available?	<input type="checkbox"/>	<input type="checkbox"/>	If NO = Request Data
11. Data Demonstrate Equivalence?	<input type="checkbox"/>	<input type="checkbox"/>	Final Decision:

Note: In addition to completing the form on the LAN, "yes" responses to questions 4, 6, 8, and 11, and every "no" response requires an explanation.

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1. Intended Use: *see memo*
2. Device Description: Provide a statement of how the device is either similar to and/or different from other marketed devices, plus data (if necessary) to support the statement. Is the device life-supporting or life sustaining? Is the device implanted (short-term or long-term)? Does the device design use software? Is the device sterile? Is the device for single use? Is the device over-the-counter or prescription use? Does the device contain drug or biological product as a component? Is this device a kit? Provide a summary about the devices design, materials, physical properties and toxicology profile if important.

**EXPLANATIONS TO "YES" AND "NO" ANSWERS TO QUESTIONS ON PAGE 1 AS NEEDED**

1. Explain why not a device:
2. Explain why not subject to 510(k):
3. How does the new indication differ from the predicate device's indication:
4. Explain why there is or is not a new effect or safety or effectiveness issue: (b)(4)
5. Describe the new technological characteristics:
6. Explain how new characteristics could or could not affect safety or effectiveness:
7. Explain how descriptive characteristics are not precise enough:
8. Explain new types of safety or effectiveness questions raised or why the questions are not new:
9. Explain why existing scientific methods can not be used:
10. Explain what performance data is needed:
11. Explain how the performance data demonstrates that the device is or is not substantially equivalent:

ATTACH ADDITIONAL SUPPORTING INFORMATION

## Internal Administrative Form

	YES	NO
1. Did the firm request expedited review?	<i>NA</i>	<input checked="" type="checkbox"/>
2. Did we grant expedited review?	<i>NA</i>	<input checked="" type="checkbox"/>
3. Have you verified that the Document is labeled Class III for GMP purposes?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4. If, not, has POS been notified?	<i>NA</i>	<input checked="" type="checkbox"/>
5. Is the product a device?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6. Is the device exempt from 510(k) by regulation or policy?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7. Is the device subject to review by CDRH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8. Are you aware that this device has been the subject of a previous NSE decision?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9. If yes, does this new 510(k) address the NSE issue(s), (e.g., performance data)?	<i>NA</i>	<input checked="" type="checkbox"/>
10. Are you aware of the submitter being the subject of an integrity investigation?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11. If, yes, consult the ODE Integrity Officer.	<i>NA</i>	<input checked="" type="checkbox"/>
12. Has the ODE Integrity Officer given permission to proceed with the review? (Blue Book Memo #191-2 and Federal Register 90N0332, September 10, 1991.	<i>NA</i>	<input checked="" type="checkbox"/>

*J*  
*12*

**510(K) MEMORANDUM**

**TO:** K042231

**FROM:** Peter L. Hudson, Ph.D.  
ODE/DGRND/Plastic and Reconstructive Surgery Devices Branch

**DATE:** 11/8/04

**SUBJ:** Gelspheres Microspheres and Bead Block Compressible Microspheres  
Biocompatibles U.K. Ltd.  
Mr. John Greenbaum

**PHONE:** 954-680-2548, mobile: 954-309-6715

**FAX:** 954-680-0161

**Email:** johngreenbaum@Compuserve.com

**Recommendation:** Substantially Equivalent  
**Procode:** HCG  
**Class:** III  
**Regulation Number:** 882.5950  
**Regulation Name:** Artificial embolization device

**REVIEW:**

The sponsor notes that they have submitted this premarket notification for a change in manufacturing sites. The former owner of the 510(k), Biocure, Inc., currently acts as a contract manufacturer to this sponsor. The sponsor now would like to manufacture the product. I asked Ms. Marjorie Shulman whether the sponsor had to submit a 510(k). Her response:

*They do not need a 510(k) just for a change in manufacturing sites. However, if a company submitted the file we have to review it. We don't have companies withdrawal the 510(k) and there is no user fee refund. The company might have submitted it because they want the SE in their own name. Please let me know if you need anything else.*

However, in addition to the manufacturing site change, the sponsor has altered the original manufacturing process identified by Biocure, Inc. in K023089. For review of these manufacturing differences, see the *Comparison of the Technological Characteristics* section below.

**1. Comparison of the Intended Use/Indications of the Subject Device and Predicate(s) Subject Device**

Gelspheres™ Microspheres & Bead Block™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations.

**Predicate device(s)**

Gelspheres Microspheres, Biocure, Inc., K023089

Gelspheres Microspheres & Bead Block Compressible Microspheres, Biocompatibles, U.K., Ltd., K033761

Gelspheres™ Microspheres & Bead Block™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations.

**Discussion of whether the intended use/indications are the same**

The indications for use are identical and therefore are substantially equivalent.

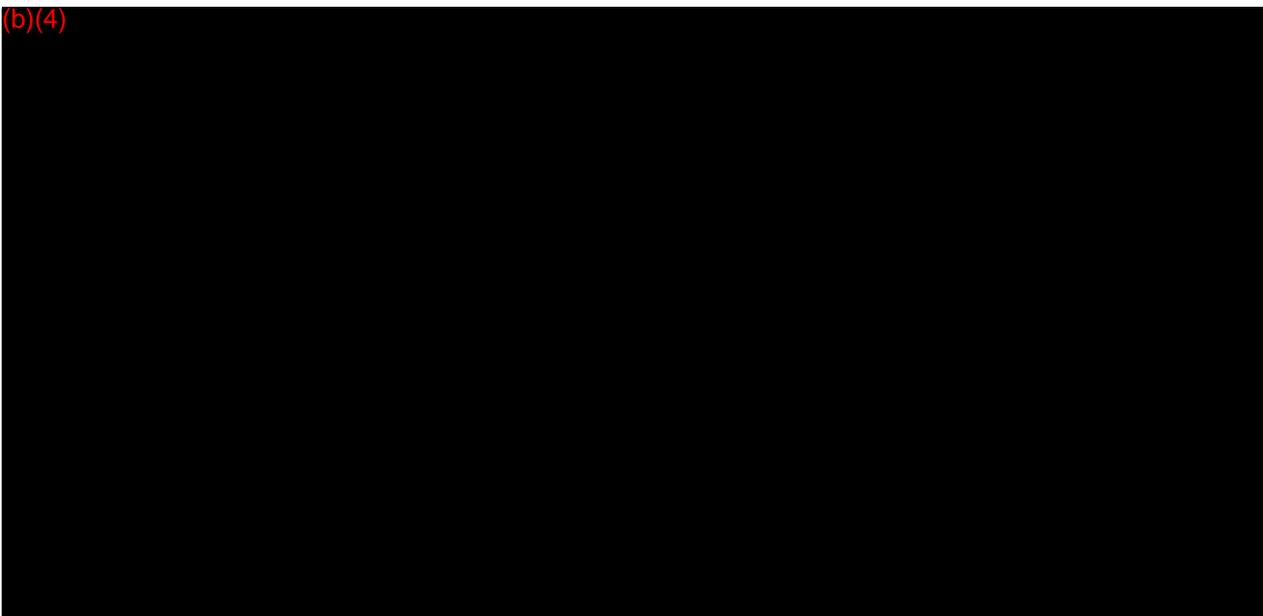
**2. Comparison of the Technological Characteristics (Design, Materials, Sizes, Features, Shapes, etc.) of the Subject Device and Predicate(s)**

**Subject Device**

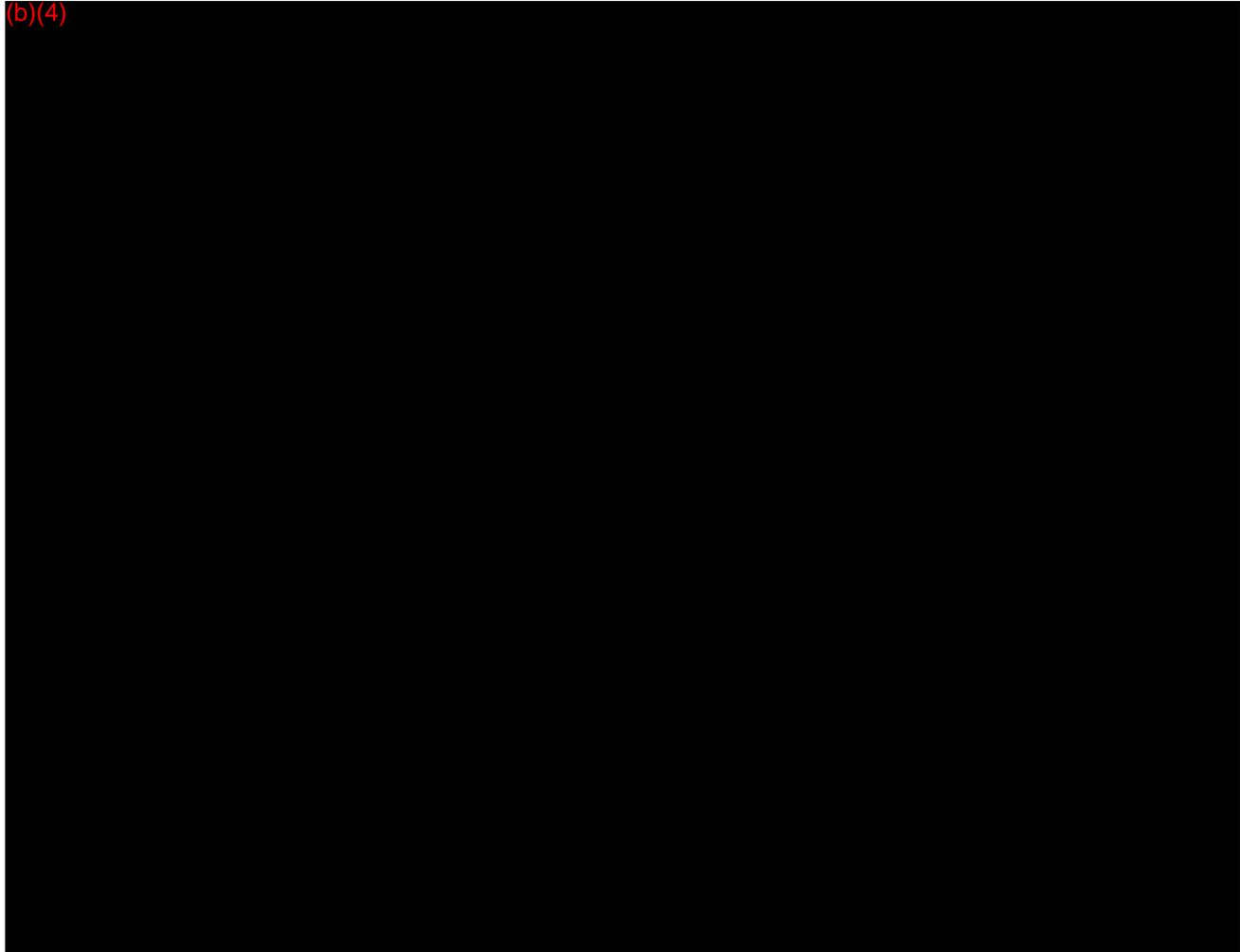
The Gelspheres™ Microspheres and Bead Block™ Compressible Microspheres are preformed soft, deformable microspheres consisting of a polyvinyl alcohol macromer. The microspheres are 85% water and are compressible to approximately 30% their size in diameter. The Bead Block™ microspheres are dyed blue to aid in the visualization of the beads in the delivery syringe. Gelspheres™ are available either undyed or dyed blue. The microspheres can be delivered through micro-catheters in the 1.5-5Fr range. The products are provided sterile in sealed glass bottles (Gelspheres™) or pre-filled syringes (Bead Block™). The Gelspheres™ and the Bead Block™ microspheres differ in the amount of AMPS used: Gelspheres™, dyed and undyed contain (b)(4), whereas Bead Block™ microspheres contain (b)(4). Both bead types are provided in the 100 µm to 1200 µm diameter range.

The embolization agents are recommended to be mixed with a non-ionic contrast reagent, e.g., Omnipaque to make a 30-50% by weight, solution.

(b)(4)



(b)(4)



Catheter compatibility

The two types of beads were tested for compatibility with various microcatheters. The compatibility assessments included:

- Aggregation of the embolic agent in the syringe
- Catheter clogging
- Ease of delivery
- Shape of the embolic agent after injection

The following catheters were assessed:

<u>Catheter I.D.</u> <u>(in./micron)</u>	<u>Micro-catheter</u>
0.024/610 and up	5Fr. Angiodynamics FasTracker® 325
0.021/540	FasTracker® 18

11  
15

	Cook 3.0Fr
0.016/420	Prowler® 14
0.013/330	Spinnaker Elite 1.8

The sponsor does not intend to recommend the use of any one type of microcatheter. They will provided the information above to customers to document compatibility with known products.

**Predicate Device(s)**

Gelspheres Microspheres, Biocure, Inc., K023089  
Gelspheres Microspheres & Bead Block Compressible Microspheres, Biocompatibles, U.K., Ltd., K033761

**Discussion of whether the subject device has a significant change in technological characteristics**

(b)(4)

(b)(4) Technologically the devices are substantially equivalent.

**3. Comparative Data (in vitro, animal and/or clinical)**

**Safety Data - Subject Device**

The sponsor notes in their Summary of Design Control Activities that because the manufacturing “processes are practically unchanged from K023089, and product specifications are unchanged, no additional biocompatibility testing” was determined to be necessary. The sponsor cites all of the biocompatibility evaluations done in support of K023089.

**Safety Data - Predicate Device(s)**

A complete list of biocompatibility evaluations, as recommended for permanently implanted medical devices in the ISO 10993 document, was conducted in support of the device in K023089.

(b)(4)

**Effectiveness Data - Predicate Device(s)**

Bead physical characteristics and preclinical animal evaluations were done.

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**Discussion of whether the data demonstrate that the subject device is as safe and effective as the predicate(s)**

(b)(4)

(b)(4)

The device is substantially equivalent to the sponsor's own predicate product.

**4. Does the product contain drugs or biologicals? No.**

**5. Sterilization**

Sterilization method: Steam, traditional

Validation method: EN554, AAMI/ISO 11134,

Packaging:

Gelspheres™ are packaged in a sealed glass vial in a solution (b)(4). The vial contents are sealed using a rubber stopper with metal retaining ring. The vials are placed in cardboard boxes.

Bead Block™ microspheres are packaged in syringes made of polycarbonate with silicone rubber bungs. The syringes are placed in a polycarbonate tray with a Tyvek® lid.

(b)(4)

Pyrogenicity: Both device versions are labeled non-pyrogenic. LAL determinations are conducted and the device specification is <0.06 EU/mL which is in accordance with the 1987 FDA Guidance Document: Guideline on validation of the Limulus Amebocyte Lysate test as an end product endotoxin test for human and animal parenteral drugs, biological products and medical devices.

SAL: 10<sup>-6</sup>

**6. Discussion of Labeling Adequacy**

(Prescription):

Package Insert (page 73, section 7.0)

Carton/Pouch Labels (page 59)

I compared the sponsor's proposed labeling with their own predicate label. The labels are the same. (b)(4)

(b)(4)

(b)(4)

The list of references contained in the device package insert in this submission is the same as what was previously cleared under K023089. The labeling is substantially equivalent to the predicate product label.

(b)(4)



14

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(b)(4)

**8. Has sponsor provided all administrative requirements?**

- Truthful and Accurate Statement – page 8
- 510(k) Summary – page 10
- Class III Certification – letter referencing K023089 was provided
- Indication for Use Page – page 7
- FDA Establishment Registration Number: 3002124545

**9. Analysis of the Equivalence of the Subject and Predicate(s)**

The subject device of the application is essentially identical to the sponsor's own predicate products. (b)(4)

(b)(4)

(b)(4) The sponsor is now manufacturing the product in their own facility and not having the product manufactured for them by the previous 510(k) owner, Biocure.

(b)(4)

(b)(4) The device is substantially equivalent to the predicates identified.

**10. Contact History/Requests for More Information:**

(b)(4)

  
Name

11/8/04  
Date

concur  
ms 11/12/04

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**Plastic and Reconstructive Surgery Devices Branch**

16  
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## Pre-market Notification Class III Certification and Summary

### PREMARKET NOTIFICATION CLASS III CERTIFICATION AND SUMMARY (As Required by 21 CFR 807.94)

I certify that, in my capacity as Director, Regulatory Affairs of Biocompatibles UK LTD. that I have conducted a reasonable search of all information known or otherwise available about the types and causes of safety and/or effectiveness problems that have been reported for GelSpheres/BeadBlock. I further certify that I am aware of the types of problems to which the GelSpheres/BeadBlock is susceptible and that, to the best of my knowledge, the following summary of the types and causes of safety and/or effectiveness problems about GelSpheres/BeadBlock is complete and accurate.

Bibliography attached by reference to 510(k) #K023089.  
Authorization to reference the file for K023089 has been provided by the original 510K holder and included in the pre-market notification.



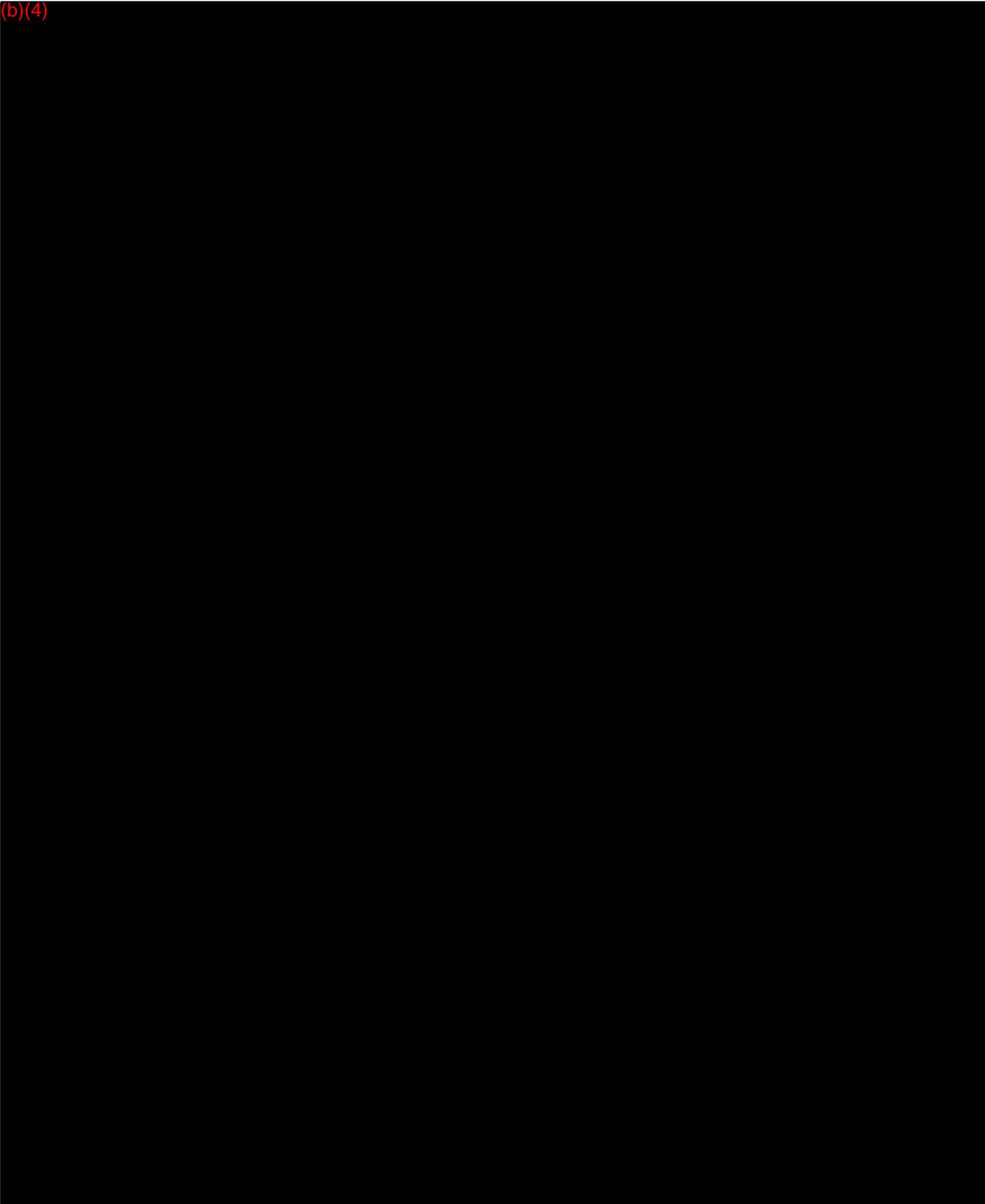
John Greenbaum/ For Dr. Alistair Taylor

November 8, 2004  
(Date)

K043321  
510(k) Number

Biocompatibles UK Ltd  
Pre-market Notification  
GelSpheres™ Embolic Agent/BeadBlock™ Embolic Agent

(b)(4)



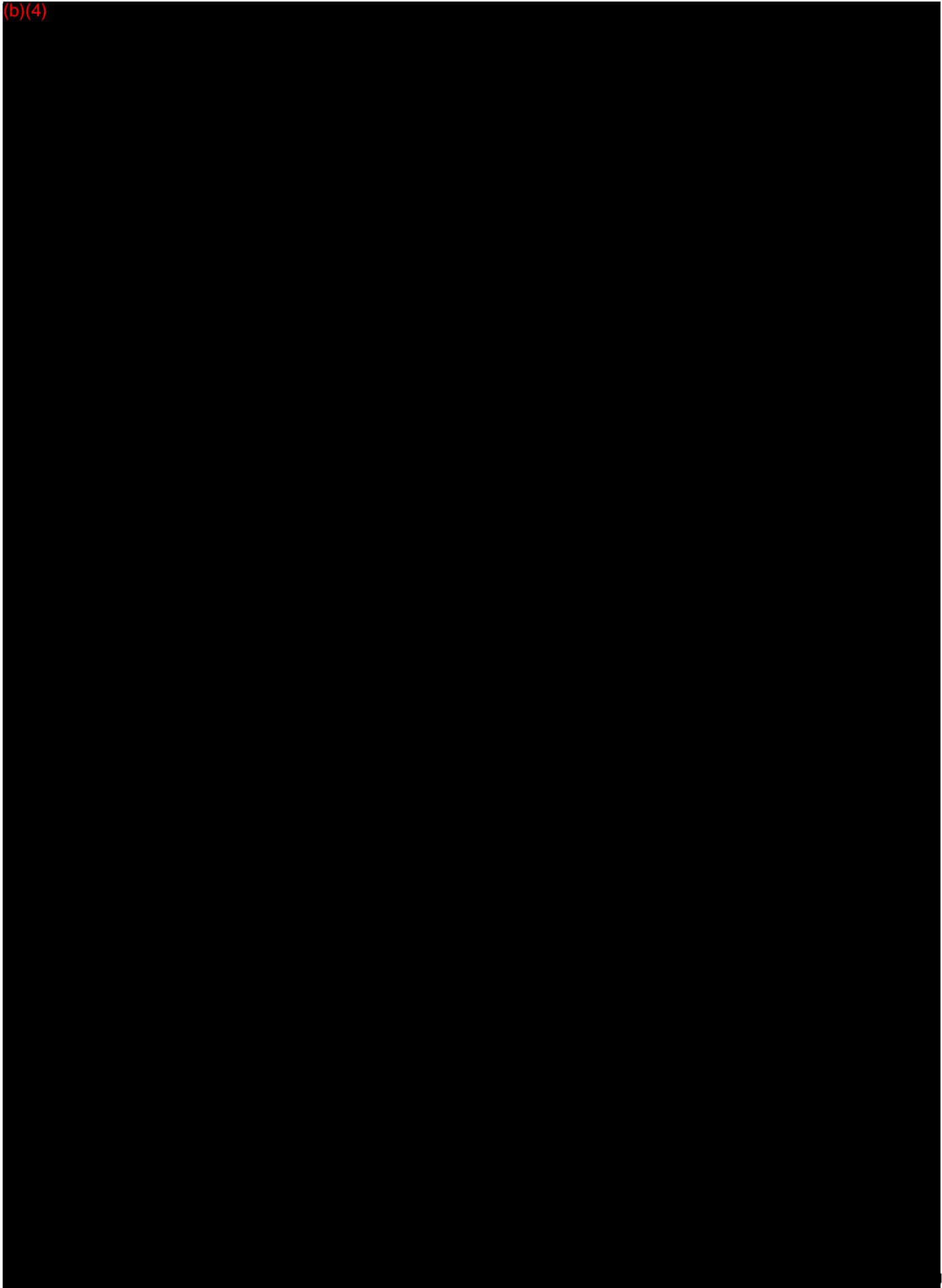
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11/8/2004

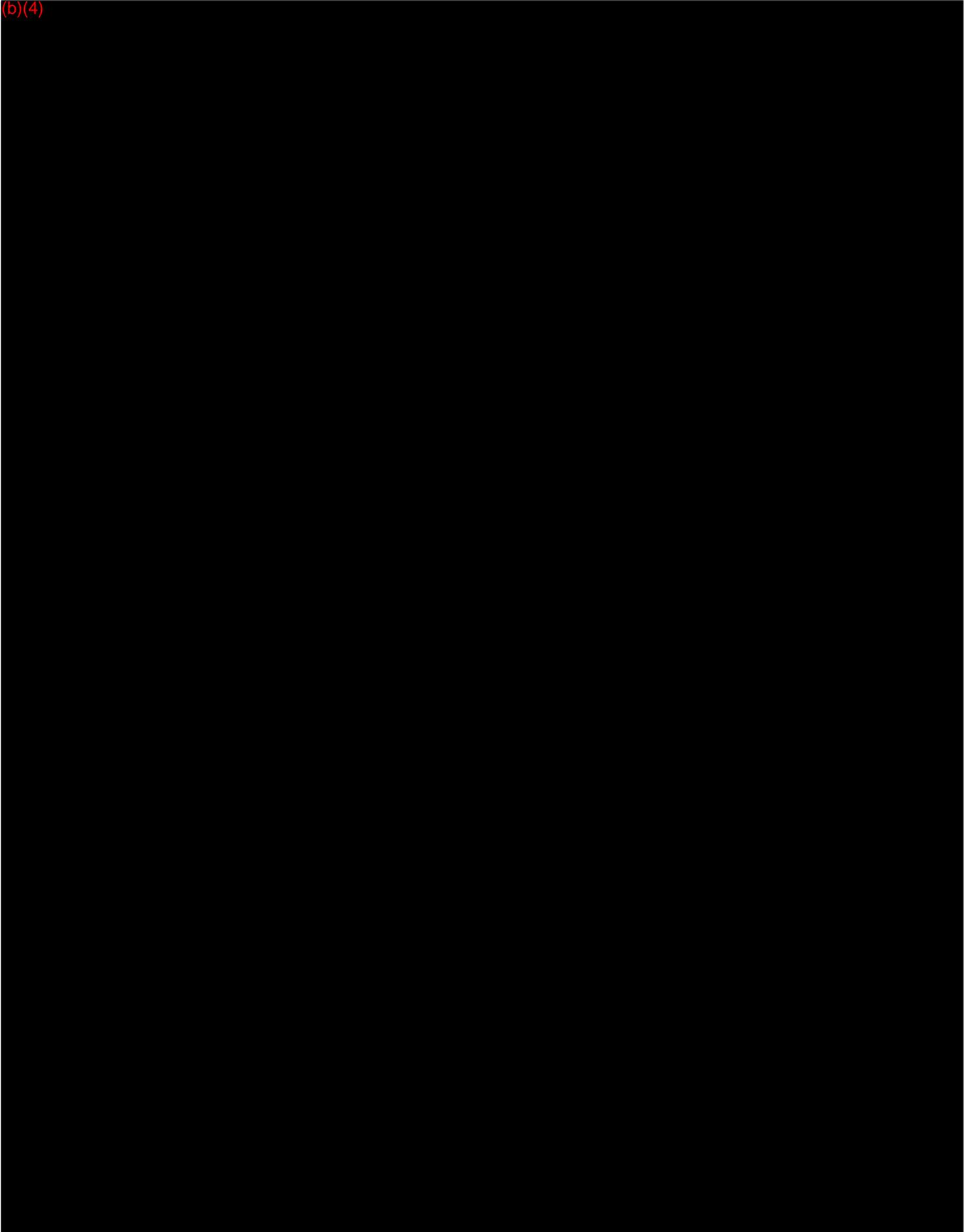
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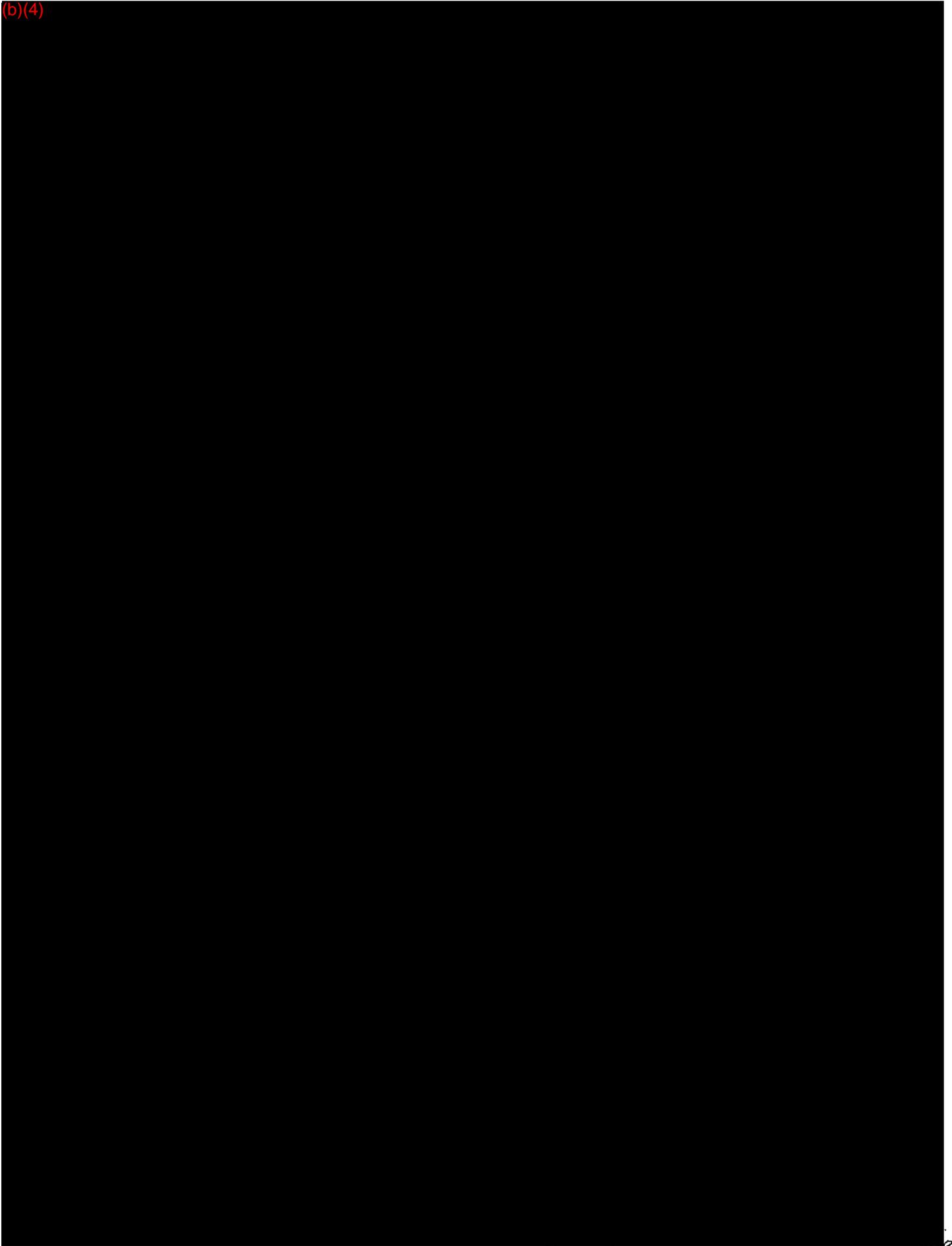


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Biocompatibles UK Ltd.,  
510(k) Pre-Market Notification

047  
GelSpheres™ Microspheres  
BeadBlock™ Compressible Microspheres

## 6.0 DEVICE MODIFICATIONS & COMPARATIVE INFORMATION

### 6.1 Predicate Devices

#### 6.1.1 510(k) Numbers and Product Codes of Equivalent Devices

**BioCure, Inc,**  
GelSpheres™ Microspheres Embolic Agent  
510K Number: #K023089  
Product Code: HCG  
CFR Section: 882.5950

**Biocompatibles, UK Ltd.,**  
GelSpheres™ Microspheres  
BeadBlock™ Compressible Microspheres  
510K Number: #K033761  
Product Code: HCG  
CFR Section: 882.5950

### 6.2 Discussion of Similarities and Differences between GelSpheres™ and predicate devices

#### 6.2.1 Indications for Use

GelSpheres™ Microspheres Embolic Agent, and BeadBlock™ have the same indications for use.

"..... Embolic Agent is intended for embolization of hypervascular tumors and arteriovenous malformations."

#### 6.2.2 Target Population

The clinical application of GelSpheres™ Microspheres, BeadBlock™ Compressible Microspheres and the predicate devices is the same, treatment of hypervascular tumors and arteriovenous malformations (AVM's). GelSpheres™/BeadBlock and the predicate devices are intended to be delivered to selected sites through catheters with a diameter appropriate for the vascular target and the size of the emboli. Accurate placement of all of all embolic agents is assured through visualization of the embolization process using radiographic imaging. Both GelSpheres™, BeadBlock™ and the predicate devices are mixed with a radio opaque contrast agent prior to injection to permit visualization. GelSpheres™, BeadBlock™ and the predicate devices are available in a range of sizes to permit selection of the most appropriate size for target vessels. GelSpheres™, BeadBlock™ and the predicate devices are intended for single use and are supplied sterile and non-Pyrogenic.

This pre-market notification is for a change of manufacturing sites. BioCure, Inc. is a contract manufacturer to Biocompatibles UK Ltd. Biocompatibles acquired the rights to manufacture GelSpheres™ and subsequent products in September 2003. A copy of the accession letter was included in K033761 where Biocompatibles UK Ltd was cleared as a repackager and distributor of GelSpheres™ and BeadBlock™ (Appendix I).

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GelSpheres™ Microspheres  
BeadBlock™ Compressible Microspheres

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### 6.2.3 Product Labeling

The Labeling for GelSpheres™ and Bead Block™ is included in Section 7.0 of this pre-market notification. The Labeling is unchanged from K033761. Indications, warnings and contraindications for GelSpheres™/Bead Block™ is the same as for the predicate devices.

### 6.2.4 Packaging

GelSpheres™ and Bead Block™ are supplied in glass vials and syringes respectively, there are no changes to package materials. The same packaging processes and equipment are used as the predicates.

### 6.2.5 Technical Characteristics

Technical characteristic and specifications are identical to the predicate devices.

### 6.2.6 Physical Characteristics

Physical and chemical characteristics are identical to the predicate devices.

#### 6.2.6.1 Catheter Delivery

Catheter delivery performance is unchanged from K033761

### 6.2.7 Performance Testing

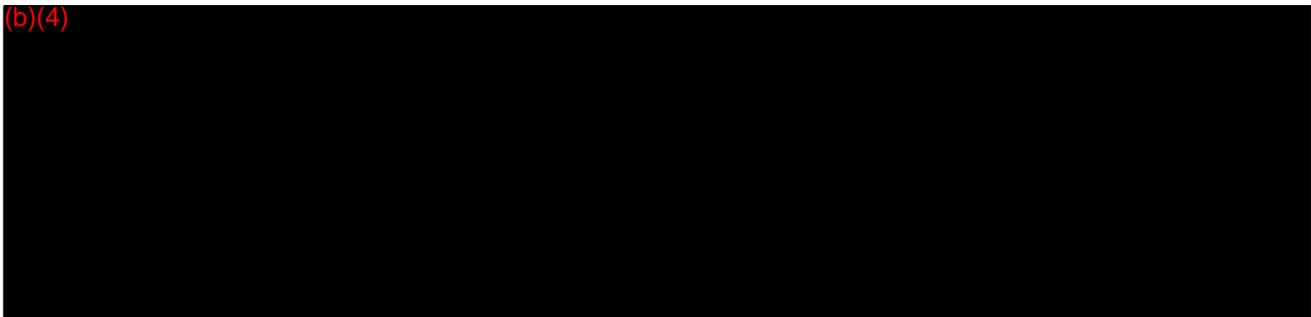
FDA published Special controls for Neurological Embolization devices in February 2004. GelSpheres™ and Bead Block™ compressible Microspheres conform to these requirements (see design controls – Section 8.0 and appendices with Validation data)

### 6.2.8 Safety Characteristics

The technical characteristics (physical characteristics, biocompatibility, sterility, endotoxin, etc) are the same for GelSpheres™ and Bead Block™ with the predicate devices. No new characteristics are added with GelSpheres™ or Bead Block™ in the addition of the Biocompatibles manufacturing process which would have an effect on product safety, effectiveness or the ability of the product to meet the relevant standards or specifications as in K023098 and K033761.

## 6.3 Discussion on GelSpheres™ and BeadBlock™ clinical testing

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 Gelspheres™ Microspheres  
 BeadBlock™ Compressible Microspheres

6.5 Comparison Table

Device Description	Gelspheres™ Microspheres UV Series (New)	Gelspheres™ Microspheres VE Series (New)	BeadBlock™ Compressible Microspheres EB Series (New)	Gelspheres™ Embolic Agent - V Series (K023089) (K033767)	Gelspheres™ Embolic Agent - S Series (K023089) (K033767)
Safety & Standards	<p>Guidance For Industry, 2004: FDA Guidance for Neurological Embolization Products</p> <p>ISO/EN 10993-1: 1997 Biological Evaluation of Medical Devices, Part 1: Evaluation and Testing</p> <p>ISO/EN 10993-3: 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.</p> <p>ISO/EN 10993-4: 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood.</p> <p>ISO/EN 10993-6: 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.</p> <p>ISO/EN 10993-10: 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.</p> <p>ISO/EN 10993-11: 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.</p> <p>ISO/EN 10993-13: 1995</p>	<p>Guidance For Industry, 2004: FDA Guidance for Neurological Embolization Products</p> <p>ISO/EN 10993-1: 1997 Biological Evaluation of Medical Devices, Part 1: Evaluation and Testing</p> <p>ISO/EN 10993-3: 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.</p> <p>ISO/EN 10993-4: 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood.</p> <p>ISO/EN 10993-6: 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.</p> <p>ISO/EN 10993-10: 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.</p> <p>ISO/EN 10993-11: 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.</p> <p>ISO/EN 10993-13: 1995</p>	<p>Guidance For Industry, 2004: FDA Guidance for Neurological Embolization Products</p> <p>ISO/EN 10993-1: 1997 Biological Evaluation of Medical Devices, Part 1: Evaluation and Testing</p> <p>ISO/EN 10993-3: 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.</p> <p>ISO/EN 10993-4: 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood.</p> <p>ISO/EN 10993-6: 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.</p> <p>ISO/EN 10993-10: 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.</p> <p>ISO/EN 10993-11: 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.</p> <p>ISO/EN 10993-13: 1995</p>	<p>Guidance For Industry, 2000: FDA Guidance for Neurological Embolization Products</p> <p>ISO/EN 10993-1: 1997 Biological Evaluation of Medical Devices, Part 1: Evaluation and Testing</p> <p>ISO/EN 10993-3: 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.</p> <p>ISO/EN 10993-4: 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood</p> <p>ISO/EN 10993-6: 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.</p> <p>ISO/EN 10993-10: 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.</p> <p>ISO/EN 10993-11: 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.</p> <p>ISO/EN 10993-13: 1995</p>	<p>Guidance For Industry, 2000: FDA Guidance for Neurological Embolization Products</p> <p>ISO/EN 10993-1: 1997 Biological Evaluation of Medical Devices, Part 1: Evaluation and Testing</p> <p>ISO/EN 10993-3: 1993 Biological Evaluation of Medical Devices, Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity.</p> <p>ISO/EN 10993-4: 1993 Biological Evaluation of Medical Devices, Part 4: Selection of tests for interaction with blood.</p> <p>ISO/EN 10993-6: 1995 Biological Evaluation of Medical Devices, Part 6: Test for local effects after implantation.</p> <p>ISO/EN 10993-10: 1995 Biological Evaluation of Medical Devices, Part 10: Tests for Irritation and Sensitization.</p> <p>ISO/EN 10993-11: 1993 Biological Evaluation of Medical Devices, Part 11: Tests for Systemic Toxicity.</p> <p>ISO/EN 10993-13: 1995</p>

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510(K) Pre-Market Notification  
 Gelspheres™ Microspheres  
 BeadBlock™ Compressible Microspheres

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	<b>Gelspheres™ Microspheres UV Series (New)</b>	<b>Gelspheres™ Microspheres VE Series (New)</b>	<b>BeadBlock™ Compressible Microspheres EB Series (New)</b>	<b>Gelspheres™ Embolic Agent - V Series (K023089) (K033761)</b>	<b>Gelspheres™ Embolic Agent - S Series (K023089) (K033761)</b>
<b>Indications for Use</b>	"Gelspheres™ and BeadBlock™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."	"Gelspheres™ and BeadBlock™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."	"Gelspheres™ and BeadBlock™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."	"Gelspheres™ and BeadBlock™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."	"Gelspheres™ and BeadBlock™ Compressible Microspheres is intended for embolization of hypervascular tumors and arteriovenous malformations."
<b>Expiration</b>	2 years	2 years	2 years	2 years	1 year
<b>Size Range</b>	5 size ranges up to 1200µm				

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Biocompatibles UK Ltd.

510(k) Pre-Market Notification  
 GelSpheres™ Microspheres  
 BeadBlock™ Compressible Microspheres

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	GelSpheres™ Microspheres UV Series (New)	GelSpheres™ Microspheres VE Series (New)	BeadBlock™ Compressible Microspheres EB Series (New)	GelSpheres™ Embolic Agent - V Series (K023089) (K033761)	GelSpheres™ Embolic Agent - S Series (K023089) (K033761)
				1200µm	
<b>Sterility</b>	SAL 10 <sup>-6</sup> ; Steam	SAL 10 <sup>-6</sup> ; Steam	SAL 10 <sup>-6</sup> ; Steam	SAL 10 <sup>-6</sup> ; Steam	SAL 10 <sup>-6</sup> ; Steam
<b>Packaging</b>	Vial, non sterile package	Vial, non sterile package	Syringe, sterile package	Vial, non sterile package	Syringe, sterile package
<b>Composition</b>	PVA, buffered Saline	PVA, Reactive Blue Dye #4, buffered Saline	PVA, Reactive Blue Dye #4, buffered Saline	PVA, Reactive Blue Dye #4, buffered Saline	PVA, Reactive Blue Dye #4, buffered Saline
<b>USE</b>	Single Use Only	Single Use Only	Single Use Only	Single Use Only	Single Use Only
<b>Delivery Method</b>	Intravascular catheter	Intravascular catheter	Intravascular catheter	Intravascular catheter	Intravascular catheter

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

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Food and Drug Administration  
9200 Corporate Boulevard  
Rockville MD 20850

DEC 16 2002

BioCure, Inc.  
c/o Mr. John Greenbaum  
Generic Devices Consulting, Inc.  
20310 SW 48<sup>th</sup> Street  
Fort Lauderdale, Florida 33332

Re: K023089

Trade/Device Name: GelSpheres Embolic Agent  
Regulation Number: 21 CFR 882.5950; 21 CFR 870.3300  
Regulation Name: Artificial embolization device; Arterial Embolization Device  
Regulatory Class: III  
Product Code: HCG; KR D  
Dated: September 13, 2002  
Received: September 17, 2002

Dear Mr. Greenbaum:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to such additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050. This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.



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Page 2 - Mr. John Greenbaum

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Office of Compliance at (301) 594-4659. Additionally, for questions on the promotion and advertising of your device, please contact the Office of Compliance at (301) 594-4639. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). Other general information on your responsibilities under the Act may be obtained from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 443-6597 or at its Internet address <http://www.fda.gov/cdrh/dsma/dsmamain.html>

Sincerely yours,

*Miriam C. Provost*  
for  
Celia M. Witten, Ph.D., M.D.  
Director  
Division of General, Restorative  
and Neurological Devices  
Office of Device Evaluation  
Center for Devices and  
Radiological Health

Enclosure

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K023089

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510(k) Number(if known): \_\_\_\_\_

Device Name: GelSpheres™ Embolic Agent

Indications For Use:

"GelSpheres™ Embolic Agent is intended for embolization of hypervascular tumors and arteriovenous malformations."

PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of Device Evaluation (ODE)

Prescription Use X OR Over-The-Counter Use \_\_\_\_\_  
(Per 21 CFR 801.109)

Meriam C. Provost (Optional Format 1-2-96)  
(Division Sign-Off)  
Division of General, Restorative  
and Neurological Devices

510(k) Number K023089

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration  
9200 Corporate Boulevard  
Rockville MD 20850

FEB - 4 2004

Biocompatibles U.K. Ltd  
c/o Mr. John Greenbaum  
Generic Devices Consulting  
20310 SW 48<sup>th</sup> Street  
Ft. Lauderdale, Florida 33332

Re: K033761

Trade/Device Name: Gelspheres™ Embolic Agent/Beadlock™ Embolic Agent  
Regulation Number: 21 CFR 882.5950  
Regulation Name: Artificial Embolization Device  
Regulatory Class: III  
Product Code: HCG  
Dated: November 28, 2003  
Received: December 8, 2003

Dear Mr. Greenbaum:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

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Page 2 - Mr. John Greenbaum

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Sincerely yours,

*Miriam C. Provost*  
for  
Celia M. Witten, Ph.D., M.D.  
Director  
Division of General, Restorative  
and Neurological Devices  
Office of Device Evaluation  
Center for Devices and Radiological Health

Enclosure

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**Indications for Use**

*K033761*

510(k) Number (if known): K033761

Device Name: Gelspheres™ Embolic Agent/Beadlock™ Embolic Agent

Indications For Use: GelSpheres™ Compressible Microsphere and BeadBlock™ Compressible Microspheres are intended for embolization of hypervascular tumors and arteriovenous malformations.

Prescription Use  (Part 21 CFR 801 Subpart D)

AND/OR

Over-The-Counter Use  (21 CFR 807 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of Device Evaluation (ODE)

*Miriam C. Provost*  
(Division Sign-Off)  
Division of General, Restorative  
and Neurological Devices

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510(k) Number *K033761*

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