

Reference materials no longer listed in the JCTLM database

The following reference materials are no longer listed in the JCTLM database that publishes available higher-order reference materials and reference measurement methods or procedures categorized in three lists:

List I: Certified reference materials and reference measurement methods/procedures for well-defined chemical entities or internationally recognized reference method-defined measurands.

Reference materials and measurement methods/procedures included in this category are those that provide values that are traceable to the SI units; e.g., electrolytes, enzymes, drugs, metabolites and substrates, non-peptide hormones, and some proteins.

List II: Reference materials for which values of the measurands are not SI-traceable but are assigned by or traceable to an internationally agreed upon protocol, e.g., reference materials for blood typing, coagulation factors, microbial serology, nucleic acids, and some proteins.

List II also contains a group of purified substances which, due to the absence of reference measurement procedures, should not be directly used for calibration of routine methods unless commutability is established and/or matrix effect independent internationally recognized standardized value transfer protocols to commutable samples are applied.

List III: Certified Reference Materials for nominal properties.

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|---------|-----------------|--|---|--------------------|---|---|---|-------------------------------|----------------------|
| acetone | human serum | ME 90701, congener alcohols in human serum | LGC (LGC Limited), United Kingdom Phone : +44 (0)20 8943 8480 Fax : +44 (0)20 8943 7554 uksales@lgcstandards.com | Mass concentration | 4.37 mg/l | | This reference material is not available any more | 03 July 2006 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|------------------------------------|---|-------------------------------------|--|--------------------|---|---|---|-------------------------------|----------------------|
| a1-acid glycoprotein | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 0.656 g/l | 0.0652 g/l to 0.661 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |
| acid phosphatase (prostatic) (PAP) | acid phosphatase purified from human prostate | BCR-410, prostatic acid phosphatase | JRC (European Commission, Joint Research Centre), Belgium Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Catalytic amount | 0.466 µkat/l | 0.012 µkat/l Level of confidence 95 % | JRC decided to discontinue the distribution of BCR-410, prostatic acid phosphatase. The reason for this decision was that the sales figures were too low to justify the efforts for monitoring its stability. | 08 Sept. 2017 | List II |
| ACTH | lyophilized material | 74/555, NIBSC Reference Reagent | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0) 1707 641467 Fax : +44 (0) 1707 641064 standards@nibsc.ac.uk | | 6.2 U per ampoule | | This preparation has been supplied as a reference material for several years and has been found acceptable for this purpose. However, since it has not been validated in any formal accreditation procedure either by WHO or by CE-marking, it can no longer be offered for use as a reference for <i>in vitro</i> diagnostic purposes. | 07 June 2006 | List II |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|--------------------------------|--|--|--|-----------------------------------|---|---|---|-------------------------------|----------------------|
| alanine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.51 mmol/l | 0.09 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |
| alanine aminotransferase (ALT) | alanine aminotransferase purified from pig heart | ERM-AD454/IFCC, alanine aminotransferase | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Catalytic amount | 3.09 μ kat/l | 0.07 μ kat/l Level of confidence 95 % | This reference material is not available anymore since it was sold out | 20 April 2016 | List I |
| albumin | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 39.7 g/l | 38.9 g/l to 40.5 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |
| alkaline phosphatase (ALP) | bovine serum albumin | JC ERM 20327, Lot 003, Japanese Certified Enzyme Reference Material: multi-enzymes | ReCCS (Reference Material Institute for Clinical Chemistry Standards), Japan Phone : +81 (0)44 850 3140 Fax : +81 (0)44 850 3141 h-umemoto@reccs.net | Catalytic amount | 419 U/l | -3 U/l to 3 U/l Level of confidence 95 % | JC ERM 20327 Lot 3 reference material is no longer available | 17 October 2016 | List II |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-------------------|----------------------|--|--|---------------------|---|---|---|-------------------------------|----------------------|
| α -amylase | bovine serum albumin | JC ERM 20327, Lot 003, Japanese Certified Enzyme Reference Material: multi-enzymes | ReCCS (Reference Material Institute for Clinical Chemistry Standards), Japan Phone : +81 (0)44 850 3140 Fax : +81 (0)44 850 3141 h-umemoto@reccs.net | Catalytic amount | 333 U/l | -4 U/l to 4 U/l Level of confidence 95 % | JC ERM 20327 Lot 3 reference material is no longer available | 17 October 2016 | List I |
| angiotensin I | lyophilized material | 86/536, NIBSC Reference Reagent | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0) 1707 641467 Fax : +44 (0) 1707 641064 standards@nibsc.ac.uk | | 2.6 μ g per ampoule | | This preparation has been supplied as a reference material for several years and has been found acceptable for this purpose. However, since it has not been validated in any formal accreditation procedure either by WHO or by CE-marking, it can no longer be offered for use as a reference for <i>in vitro</i> diagnostic purposes. | 07 June 2006 | List II |
| antithrombin | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.92 IU | 3.4 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|---------------------|------------------------------|--------------------------------|---|---|---|---|--|-------------------------------|----------------------|
| antithrombin | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Antigen | 0.93 IU | 9.2 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |
| antithrombin | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.93 IU | 2.8 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| antithrombin | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Antigen | 0.95 IU | 2.4 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| apolipoprotein A II | purified apolipoprotein A II | BCR-394, apo A II | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration after reconstitution | 0.321 g/l | 0.019 g/l Level of confidence 95 % | This reference material is no longer available from IRMM | 14 April 2016 | List II |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|---------------|---------------------------------|--|--|-----------------------------------|---|---|--|-------------------------------|----------------------|
| arginine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.94 mmol/l | 0.14 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |
| L-arginine | L-arginine crystalline material | NMIJ CRM 6017-a, L-arginine | NMIJ (National Metrology Institute of Japan), Japan Phone : +81 29 861 4059 Fax : +81 29 861 4009 nmij-crm-info@m.aist.go.jp | Mass fraction | 0.998 kg/kg | 0.002 kg/kg Level of confidence 95 % | This reference material is no longer available and has been replaced by NMIJ CRM 6017-b. | 06 April 2016 | List I |
| aspartic acid | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.50 mmol/l | 0.09 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |
| bilirubin | bilirubin crystalline material | SRM 916a, biliburin | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 98.3 % | 0.3 % Level of confidence 95 % | SRM 916a is out of stock. A renewal material, SRM 916b, is currently in development. | 09 April 2014 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|--------------------|-----------------|--|---|--------------------|---|---|---|-------------------------------|----------------------|
| 1-butanol | human serum | ME 90701, congener alcohols in human serum | LGC (LGC Limited), United Kingdom Phone : +44 (0)20 8943 8480 Fax : +44 (0)20 8943 7554 uksales@lgcstandards.com | Mass concentration | 1.58 mg/l | | This reference material is not available any more | 03 July 2006 | List I |
| 2-butanol | human serum | ME 90701, congener alcohols in human serum | LGC (LGC Limited), United Kingdom Phone : +44 (0)20 8943 8480 Fax : +44 (0)20 8943 7554 uksales@lgcstandards.com | Mass concentration | 0.78 mg/l | | This reference material is not available any more | 03 July 2006 | List I |
| 2-methyl-1-butanol | human serum | ME 90701, congener alcohols in human serum | LGC (LGC Limited), United Kingdom Phone : +44 (0)20 8943 8480 Fax : +44 (0)20 8943 7554 uksales@lgcstandards.com | Mass concentration | 0.62 mg/l | | This reference material is not available any more | 03 July 2006 | List I |
| 3-methyl-1-butanol | human serum | ME 90701, congener alcohols in human serum | LGC (LGC Limited), United Kingdom Phone : +44 (0)20 8943 8480 Fax : +44 (0)20 8943 7554 uksales@lgcstandards.com | Mass concentration | 0.66 mg/l | | This reference material is not available any more | 03 July 2006 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|------------|-------------------|---|--|-----------------------------------|---|--|--|-------------------------------|----------------------|
| 2-butanone | human serum | ME 90701, congener alcohols in human serum | LGC (LGC Limited), United Kingdom Phone : +44 (0)20 8943 8480 Fax : +44 (0)20 8943 7554 uksales@lgcstandards.com | Mass concentration | 1 mg/l | | This reference material is not available any more | 03 July 2006 | List I |
| cadmium | bovine blood | ERM CE194, Lyophilised bovine blood | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 0.2 mg/l | 0.05 mg/l Level of confidence 95 % | This reference material is no longer available from IRMM | 14 April 2016 | List I |
| calcium | calcium carbonate | SRM 915a, calcium carbonate (clinical standard) | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass fraction | 99.965 % | 0.015 % Level of confidence 95 % | This reference material has been replaced by SRM 915b, which was approved for the JCTLM Database | 07 February 2011 | List I |
| calcium | human serum | SRM 956b, electrolytes in frozen human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 1.974 mmol/l to 2.949 mmol/l | 0.013 mmol/l to 0.019 mmol/l Level of confidence 95 % | This reference material has been replaced by SRM 956c, which was approved for the JCTLM Database | 07 February 2011 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|---------------------|-------------------------|---|--|--------------------|---|--|--|-------------------------------|----------------------|
| total beta-carotene | lyophilized human serum | SRM 968c, Fat-soluble vitamins, carotenoids, and cholesterol in human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass concentration | 0.171 µg/ml to 0.436 µg/ml | 0.017 µg/ml to 0.034 µg/ml Level of confidence 95 % | This material has expired on 30 September 2008 and was sold out. | 03 October 2008 | List I |
| trans-beta-carotene | lyophilized human serum | SRM 968c, Fat-soluble vitamins, carotenoids, and cholesterol in human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass concentration | 0.157 µg/ml to 0.391 µg/ml | 0.016 µg/ml to 0.047 µg/ml Level of confidence 95 % | This material has expired on 30 September 2008 and was sold out. | 03 October 2008 | List I |
| ceruloplasmin | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 0.205 g/l | 0.194 g/l to 0.216 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |
| chloride | potassium chloride | SRM 918a, potassium chloride (clinical) | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass fraction | 47.546 % | 0.004 % Level of confidence 95 % | This reference material has been replaced by SRM 918b, which was approved for the JCTLM Database | 07 February 2011 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|------------------------------|----------------------------------|---|--|-----------------------------------|---|--|--|-------------------------------|----------------------|
| chloride | sodium chloride | SRM 919a, sodium chloride (clinical) | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass fraction | 99.89 % | 0.3 % Level of confidence 95 % | This reference material has been replaced by SRM 919b, which was approved for the JCTLM Database | 07 February 2011 | List I |
| cholesterol | cholesterol crystalline material | SRM 911b, cholesterol | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass fraction | 99.8 % | 0.1 % Level of confidence 95 % | This reference material is no longer available from NIST and has been replaced with SRM 911c. | 24 June 08 | List I |
| cholesterol | human serum | SRM 968c, fat-soluble vitamins, carotenoids, and cholesterol in human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 3.454 mmol/l to 4.318 mmol/l | 0.035 mmol/l to 0.043 mmol/l Level of confidence 95 % | This material has expired on 30 September 2008 and was sold out. | 03 October 2008 | List I |
| α 1-anti-chymotrypsin | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 0.245 g/l | 0.23 g/l to 0.26 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-----------------------|-----------------|--------------------------------|---|---------------------|---|---|--|-------------------------------|----------------------|
| coagulation factor II | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.86 IU | 3.6 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| coagulation factor II | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.89 IU | 4.4 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |
| coagulation factor IX | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.94 IU | 2.9 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |
| coagulation factor IX | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.94 IU | 4.6 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-------------------------|-----------------|--------------------------------|---|---------------------|---|---|--|-------------------------------|----------------------|
| coagulation factor V | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.87 IU | 3.6 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| coagulation factor VII | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 1.05 IU | 4.9 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |
| coagulation factor VII | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.87 IU | 6.8 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| coagulation factor VIII | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.66 IU | 6.9 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-------------------------|-----------------|--------------------------------|---|---------------------|---|---|--|-------------------------------|----------------------|
| coagulation factor VIII | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.8 IU | 4.7 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| coagulation factor X | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.86 IU | 4.1 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| coagulation factor X | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.94 IU | 1.5 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |
| coagulation factor XI | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.88 IU | 3.1 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-------------------------|----------------------|--|---|---------------------|---|---|--|-------------------------------|----------------------|
| coagulation factor XIII | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.71 IU | 8.6 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| complement C3 | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 1.091 g/l | 1.064 g/l to 1.118 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |
| complement C4 | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 0.151 g/l | 0.146 g/l to 0.156 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |
| creatinase kinase (CK) | bovine serum albumin | JC ERM 20327, Lot 003, Japanese Certified Enzyme Reference Material: multi-enzymes | ReCCS (Reference Material Institute for Clinical Chemistry Standards), Japan Phone : +81 (0)44 850 3140 Fax : +81 (0)44 850 3141 h-umemoto@reccs.net | Catalytic amount | 420 U/l | -4 U/l to 4 U/l Level of confidence 95 % | JC ERM 20327 Lot 3 reference material is no longer available | 17 October 2016 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|------------|--------------------|--|---|-----------------------------------|---|---|--|-------------------------------|----------------------|
| creatinine | frozen human serum | NIST SRM 967, Creatinine in frozen human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass concentration | 7.5 mg/L to 39 mg/L | 0.16 mg/L to 0.49 mg/L Level of confidence 95 % | The inventory of the material SRM 967 has been depleted and was superseded by SRM 967a. | 09 February 2015 | List I |
| cystine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 1.16 mmol/l | 0.06 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |
| ethanol | human serum | ME 90701, congener alcohols in human serum | LGC (LGC Limited), United Kingdom Phone : +44 (0)20 8943 8480 Fax : +44 (0)20 8943 7554 uksales@lgcstandards.com | Mass concentration | 1.57 mg/l | | This reference material is not available any more | 03 July 2006 | List I |
| fibrinogen | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 2.4 mg | 3.2 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|------------|------------------------------|---|---|-----------------------------------|---|--|--|-------------------------------|----------------------|
| fibrinogen | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 2.58 mg | 5 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| glucose | glucose crystalline material | DMR 190b, Glucose (purity) | CENAM (Centro Nacional de Metrología), Mexico Phone : +52 (442) 211 05 00 Fax : +52 (442) 211 05 69 gsainz@cenam.mx | Mass fraction | 99.01 % | 0.14 % Level of confidence 95 % | All the material DMR 910b was sold | 01 Nov. 2008 | List I |
| glucose | glucose crystalline material | SRM 917b, D-glucose (dextrose) | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass fraction | 99.7 % | 0.2 % Level of confidence 95 % | SRM 917b is no longer available and has been superseded by SRM 917c. | 09 February 2015 | List I |
| glucose | human serum | SRM 965a, glucose in frozen human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 1.918 mmol/l to 16.24 mmol/l | 0.02 mmol/l to 0.19 mmol/l Level of confidence 95 % | SRM 965a is no longer available and has been superseded by SRM 965b. | 09 February 2015 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-------------------------------------|----------------------|--|--|-----------------------------------|---|---|---|-------------------------------|----------------------|
| glutamic acid | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.27 mmol/l | 0.1 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |
| γ -glutamyltransferase (GGT) | bovine serum albumin | JC ERM 20327, Lot 003, Japanese Certified Enzyme Reference Material: multi-enzymes | ReCCS (Reference Material Institute for Clinical Chemistry Standards), Japan Phone : +81 (0)44 850 3140 Fax : +81 (0)44 850 3141 h-umemoto@reccs.net | Catalytic amount | 149 U/l | -1 U/l to 1 U/l Level of confidence 95% | JC ERM 20327 Lot 3 reference material is no longer available | 17 October 2016 | List I |
| glycine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.45 mmol/l | 0.08 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |
| haptoglobin | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 0.893 g/l | 0.884 g/l to 0.902 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|----------------------------|------------------|--|--|-----------------------------------|---|---|--|-------------------------------|----------------------|
| histidine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.83 mmol/l | 0.11 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |
| 25-hydroxyvitamin D2 | human serum | SRM 972, Vitamin D in Human Serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass fraction | 1.67 ng/g to 25.8 ng/g | 0.08 ng/g to 1.9 ng/g Level of confidence 95 % | The inventory of SRM 972 has been depleted, and therefore it is no longer available from NIST. This SRM has now been replaced by SRM 972a Vitamin D Metabolites in Frozen Human Serum. | 16 January 2015 | List I |
| 25-hydroxyvitamin D3 | human serum | SRM 972, Vitamin D in Human Serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass fraction | 12.0 ng/g to 32.3 ng/g | 0.6 ng/g to 0.8 ng/g Level of confidence 95 % | The inventory of SRM 972 has been depleted, and therefore it is no longer available from NIST. This SRM has now been replaced by SRM 972a Vitamin D Metabolites in Frozen Human Serum. | 16 January 2015 | List I |
| 3-epi-25-hydroxyvitamin D3 | human serum | SRM 972, Vitamin D in Human Serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass fraction | 36.9 ng/g | 1.1 ng/g Level of confidence 95 % | The inventory of SRM 972 has been depleted, and therefore it is no longer available from NIST. This SRM has now been replaced by SRM 972a Vitamin D Metabolites in Frozen Human Serum. | 16 January 2015 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|------------------|-----------------|--------------------------------|--|--------------------|---|---|-------------------------------------|-------------------------------|----------------------|
| immunoglobulin A | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 1.96 g/l | 1.92 g/l to 2.00 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |
| immunoglobulin G | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 9.68 g/l | 9.58 g/l to 9.68 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |
| immunoglobulin M | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 0.797 g/l | 0.774 g/l to 0.82 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|--------------------------------|----------------------|--|--|-----------------------------------|---|---|---|-------------------------------|----------------------|
| interleukin 2 soluble receptor | lyophilised material | 97/600, NIBSC Reference Preparation, Interleukin-2 Soluble Receptor, human | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0) 1707 641467 Fax : +44 (0) 1707 641064 standards@nibsc.ac.uk | | 1000 U per ampoule | no certified range | This preparation has been supplied as a reference material for several years and has been found acceptable for this purpose. However, since it has not been validated in any formal accreditation procedure either by WHO or by CE-marking, it can no longer be offered for use as a reference for <i>in vitro</i> diagnostic purposes. | 07 June 2006 | List II |
| isobutanol | human serum | ME 90701, congener alcohols in human serum | LGC (LGC Limited), United Kingdom Phone : +44 (0)20 8943 8480 Fax : +44 (0)20 8943 7554 uksales@lgcstandards.com | Mass concentration | 0.84 mg/l | | This reference material is not available any more | 03 July 2006 | List I |
| isoleucine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.39 mmol/l | 0.07 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-----------------------------|--|--|--|--------------------|---|--|--|-------------------------------|----------------------|
| lactate dehydrogenase (LDH) | bovine serum albumin | JC ERM 20327, Lot 003, Japanese Certified Enzyme Reference Material: multi-enzymes | ReCCS (Reference Material Institute for Clinical Chemistry Standards), Japan Phone : +81 (0)44 850 3140 Fax : +81 (0)44 850 3141 h-umemoto@reccs.net | Catalytic amount | 398 U/l | -5 U/l to 5 U/l Level of confidence 95 % | JC ERM 20327 Lot 3 reference material is no longer available | 17 October 2016 | List I |
| lactate dehydrogenase (LDH) | lactate dehydrogenase purified from human erythrocytes | ERM-AD453/IFCC, lactate dehydrogenase | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Catalytic amount | 8.37 µkat/l | 0.12 µkat/l Level of confidence 95 % | This reference material is no longer available from IRMM | 14 April 2016 | List I |
| lead | bovine blood | ERM CE194, Lyophilised bovine blood | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 126 mg/l | 4 mg/l Level of confidence 95 % | This reference material is no longer available from IRMM | 14 April 2016 | List I |
| lead | bovine blood | SRM 955b, Lead in bovine blood | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass concentration | 4.04 µg/dl to 39.36 µg/dl | 0.15 µg/dl to 0.36 µg/dl Level of confidence 95 % | SRM 955b is no longer available and has been replaced by SRM 955c, which was approved for the JCTLM database | 05 March 2009 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|------------------|------------------|--|--|-----------------------------------|---|--|--|-------------------------------|----------------------|
| leucine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.48 mmol/l | 0.09 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |
| lithium | human serum | SRM 956b, electrolytes in frozen human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 0.46 mmol/l to 1.92 mmol/l | 0.007 mmol/l to 0.027 mmol/l Level of confidence 95 % | This reference material has been replaced by SRM 956c, which was approved for the JCTLM Database | 07 February 2011 | List I |
| lysine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.47 mmol/l | 0.1 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |
| a2-macroglobulin | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 1.64 g/l | 1.59 g/l to 1.69 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|------------|-------------------------------|--|--|-----------------------------------|---|---|--|-------------------------------|----------------------|
| magnesium | human serum | SRM 956b, electrolytes in frozen human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 0.458 mmol/l to 1.522 mmol/l | 0.006 mmol/l to 0.02 mmol/l Level of confidence 95 % | This reference material has been replaced by SRM 956c, which was approved for the JCTLM Database | 07 February 2011 | List I |
| magnesium | magnesium gluconate dihydrate | SRM 929, magnesium gluconate | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass fraction | 5.403 % | 0.022 % Level of confidence 95 % | This reference material has been replaced by SRM 929a, which was approved for the JCTLM Database | 07 February 2011 | List I |
| methanol | human serum | ME 90701, congener alcohols in human serum | LGC (LGC Limited), United Kingdom Phone : +44 (0)20 8943 8480 Fax : +44 (0)20 8943 7554 uksales@lgcstandards.com | Mass concentration | 9.01 mg/l | | This reference material is not available any more | 03 July 2006 | List I |
| methionine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.43 mmol/l | 0.09 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|------------------------------|-------------------------------------|--|--|--|---|---|--|-------------------------------|----------------------|
| mix of prothrombin fragments | aqueous solution | IRMM/IFCC-492, mix of equal quantities of prothrombin gene fragments wildtype G20210/ mutant G20210A | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Identity | not applicable | probability of error $p < 3 \times 10^{-6}$ | This reference material is no longer available from IRMM | 14 April 2016 | List III |
| C-peptide | lyophilized phosphate buffer saline | NMIJ CRM 6901-a, C-peptide | NMIJ (National Metrology Institute of Japan), Japan Phone : +81 29 861 4059 Fax : +81 29 861 4009 nmij-crm-info@m.aist.go.jp | Mass concentration of C-peptide after reconstitution | 80.7 mg/L | 6.2 % Level of confidence 95 % | This reference material is no longer available and has been replaced by NMIJ CRM 6901-b. | 09 February 2015 | List I |
| total C-peptide | lyophilized phosphate buffer saline | NMIJ CRM 6901-a, C-peptide | NMIJ (National Metrology Institute of Japan), Japan Phone : +81 29 861 4059 Fax : +81 29 861 4009 nmij-crm-info@m.aist.go.jp | Mass concentration of total C-peptide after reconstitution | 81.7 mg/L | 6.2 % Level of confidence 95 % | This reference material is no longer available and has been replaced by NMIJ CRM 6901-b. | 09 February 2015 | List I |
| phenylalanine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.44 mmol/l | 0.08 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|------------|--------------------|--|--|-----------------------------------|---|--|--|-------------------------------|----------------------|
| potassium | human serum | SRM 956b, electrolytes in frozen human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 1.987 mmol/l to 5.973 mmol/l | 0.014 mmol/l to 0.045 mmol/l Level of confidence 95 % | This reference material has been replaced by SRM 956c, which was approved for the JCTLM Database | 07 February 2011 | List I |
| potassium | potassium chloride | SRM 918a, potassium chloride (clinical) | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass fraction | 52.435 % | 0.0044 % Level of confidence 95 % | This reference material has been replaced by SRM 918b, which was approved for the JCTLM Database | 07 February 2011 | List I |
| proline | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.44 mmol/l | 0.09 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |
| 1-propanol | human serum | ME 90701, congener alcohols in human serum | LGC (LGC Limited), United Kingdom Phone : +44 (0)20 8943 8480 Fax : +44 (0)20 8943 7554 uksales@lgcstandards.com | Mass concentration | 1.14 mg/l | | This reference material is not available any more | 03 July 2006 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-----------|-----------------|--------------------------------|---|---------------------|---|---|--|-------------------------------|----------------------|
| protein C | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.89 IU | 4.2 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| protein C | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.96 IU | 3.2 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |
| protein C | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Antigen | 0.97 IU | 3.3 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |
| protein C | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Antigen | 0.89 IU | 2.2 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-----------|-----------------|--------------------------------|---|---------------------|---|---|--|-------------------------------|----------------------|
| protein S | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Total antigen | 0.85 IU | 8.1 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| protein S | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Free antigen | 0.88 IU | 4.5 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| protein S | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.78 IU | 4.9 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| protein S | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Total antigen | 0.88 IU | 4.4 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|----------------------|------------------|--|---|---------------------|---|---|--|-------------------------------|----------------------|
| protein S | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Free antigen | 0.92 IU | 7.7 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |
| protein S | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Functional activity | 0.73 IU | 6.8 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |
| prothrombin fragment | aqueous solution | IRMM/IFCC-490, prothrombin gene fragment wildtype G20210 | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Identity | not applicable | probability of error $p < 3 \times 10^{-6}$ | This reference material is no longer available from IRMM | 14 April 2016 | List III |
| prothrombin fragment | aqueous solution | IRMM/IFCC-491, prothrombin gene fragment mutant G20210A | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Identity | not applicable | probability of error $p < 3 \times 10^{-6}$ | This reference material is no longer available from IRMM | 14 April 2016 | List III |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|--------------------------|-------------------------|---|--|-----------------------------|---|--|---|-------------------------------|----------------------|
| C-reactive protein (CRP) | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 0.0392 g/l | 0.0373 g/l to 0.0407 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |
| C-reactive protein (CRP) | human serum | ERM-DA472/IFCC, human serum | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 41.8 mg/L | 2.5 mg/L Level of confidence of about 95 % | This material is not available anymore since it was sold out | 04 April 2012 | List I |
| C-reactive protein (CRP) | aqueous solution | NMIJ CRM 6201-b, C-reactive protein solution | NMIJ (National Metrology Institute of Japan), Japan Phone : +81 29 861 4059 Fax : +81 29 861 4009 nmij-crm-info@m.aist.go.jp | Amount-of-substance content | 40.0 µmol/kg | 1.6 µmol/kg Level of confidence 95 % | NMIJ CRM 6201-b reference material reached the expiry date of 30 Septembre 2017, and is no longer available. NMIJ is preparing a new batch. | 30 Sep. 2017 | List I |
| retinol | lyophilized human serum | SRM 968c, Fat-soluble vitamins, carotenoids, and cholesterol in human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass concentration | 0.484 µg/ml to 0.841 µg/ml | 0.012 µg/ml to 0.027 µg/ml Level of confidence 95 % | This material has expired on 30 September 2008 and was sold out. | 03 October 2008 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-----------|------------------|--|--|-----------------------------------|---|--|--|-------------------------------|----------------------|
| serine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.43 mmol/l | 0.09 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |
| sodium | human serum | SRM 956b, electrolytes in frozen human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 120.1 mmol/l to 160.7 mmol/l | 1.4 mmol/l to 1.8 mmol/l Level of confidence 95 % | This reference material has been replaced by SRM 956c, which was approved for the JCTLM Database | 07 February 2011 | List I |
| sodium | sodium chloride | SRM 919a, sodium chloride (clinical) | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass fraction | 99.89 % | 0.3 % Level of confidence 95 % | This reference material has been replaced by SRM 919b, which was approved for the JCTLM Database | 07 February 2011 | List I |
| threonine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.39 mmol/l | 0.08 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|------------------|-------------------------|---|--|--------------------|---|--|--|-------------------------------|----------------------|
| thromboplastin | bovine brain isolate | BCR-148, Lyophilised thromboplastin bovine | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | | slope: 1.011; intercept:-0.321; slope and intercept of calibration line relative to WHO IRO 67/40 | slope: 0.015; intercept: 0.025; slope and intercept of calibration line relative to WHO IRP 67/40 | This reference material is no longer available from IRMM | 14 April 2016 | List II |
| alpha-tocopherol | lyophilized human serum | SRM 968c, Fat-soluble vitamins, carotenoids, and cholesterol in human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass concentration | 7.47 µg/ml to 16.79 µg/ml | 0.47 µg/ml to 0.76 µg/ml Level of confidence 95 % | This material has expired on 30 September 2008 and was sold out. | 03 October 2008 | List I |
| delta-tocopherol | lyophilized human serum | SRM 968c, Fat-soluble vitamins, carotenoids, and cholesterol in human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass concentration | 0.131 µg/ml to 0.527 µg/ml | 0.018 µg/ml to 0.071 µg/ml Level of confidence 95 % | This material has expired on 30 September 2008 and was sold out. | 03 October 2008 | List I |
| gamma-tocopherol | lyophilized human serum | SRM 968c, Fat-soluble vitamins, carotenoids, and cholesterol in human serum | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Mass concentration | 1.56 µg/ml to 3.9 µg/ml | 0.1 µg/ml to 0.13 µg/ml Level of confidence 95 % | This material has expired on 30 September 2008 and was sold out. | 03 October 2008 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-----------------|------------------|--|--|-----------------------------------|---|---|---|-------------------------------|----------------------|
| transferrin | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 2.45 g/l | 2.39 g/l to 2.51 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |
| transthyretin | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 0.243 g/l | 0.225 g/l to 0.261 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |
| a1-anti-trypsin | human serum | BCR-470, serum proteins | JRC (European Commission, Joint Research Centre), European Union Phone : +32 (0) 14 571 705 Fax : +32 (0) 14 590 406 jrc-rm-distribution@ec.europa.eu | Mass concentration | 1.206 g/l | 1.195 g/l to 1.217 g/l Level of confidence 95 % | This material is no longer for sale | 10 February 2009 | List I |
| tyrosine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.47 mmol/l | 0.09 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-----------------------|------------------|--|---|-----------------------------------|---|---|--|-------------------------------|----------------------|
| valine | aqueous solution | SRM 2389, amino acids in 0.1 mol/l hydrochloric acid | NIST (National Institute of Standards and Technology), United States Phone : +1 301 975 6776 Fax : +1 301 948 3730 srminfo@nist.gov | Amount-of-substance concentration | 2.44 mmol/l | 0.08 mmol/l Level of confidence 95 % | This reference material is no longer available and has been replaced by SRM 2389a | 09 March 2012 | List I |
| von Willebrand factor | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Ristocetin Cofactor activity | 0.71 IU | 13.8 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |
| von Willebrand factor | human plasma | Lot#2, SSC/ISTH | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Antigen | 0.95 IU | 7.9 % Level of confidence 95 % | The material has been de-listed for two reasons: -upon reaching the expiry date of "end June 2006" and -exhaustion of stocks | 03 July 2006 | List II |
| von Willebrand factor | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Ristocetin Cofactor activity | 0.86 IU | 4.9 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |

| Analyte | Matrix/Material | Name of the reference material | Producer | Quantity | Range of certified values in reference material | Range of expanded uncertainties for certified value | Comment(s) from RM producer | Date removed from JCTLM lists | Previously listed in |
|-----------------------|-----------------|--------------------------------|---|------------------|---|---|--|-------------------------------|----------------------|
| von Willebrand factor | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Antigen | 1.06 IU | 5.7 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |
| von Willebrand factor | human plasma | Lot #3, SSC | NIBSC (National Institute for Biological Standards and Control), United Kingdom Phone : +44 (0)1707 641318 Fax : +44 (0)1707 647227 thubbard@nibsc.ac.uk | Collagen Binding | 1.07 IU | 11.2 % Level of confidence 95 % | The material is no longer available because the stocks have been exhausted | 16 Dec. 2014 | List II |