

## Industrial reference materials

## Fertilizers

Code	Product	Unit
BCR-032	Moroccan phosphate rock - Trace elements Certified values Ca expressed as CaO .....518 g/kg Total P expressed as P <sub>2</sub> O <sub>5</sub> .....329.8 g/kg Carbonate Carbon expressed as CO <sub>2</sub> ..... 51.0 g/kg F .....40.4 g/kg Si expressed as SiO <sub>2</sub> .....20.9 g/kg Indicative values/Certified values As ..... 9.5 mg/kg B ..... 22.6 mg/kg Cd ..... 20.8 mg/kg Co ..... 0.59 mg/kg Cr .....257 mg/kg Cu .....33.7 mg/kg Hg .....55 mg/kg Mn ..... 18.8 mg/kg Ni ..... 34.6 mg/kg Ti ..... 171 mg/kg V ..... 153 mg/kg Zn .....253 mg/kg Total S expressed as SiO <sub>3</sub> ..... 18.4 g/kg Al expressed as Al <sub>2</sub> O <sub>3</sub> ..... 5.5 g/kg Mg expressed as MgO ..... 4.0 g/kg Fe espressa as Fe <sub>2</sub> O <sub>3</sub> ..... 2.3 g/kg	100 g
BCR-033	Super-phosphate - Constituents Certified values P <sub>2</sub> O <sub>5</sub> ..... 193.4 g/kg SO <sub>4</sub> ..... 428.0 g/kg CaO ..... 314.8 g/kg SiO <sub>2</sub> .....29.2 g/kg F ..... 16.5 g/kg Al <sub>2</sub> O <sub>3</sub> ..... 11.0 g/kg Fe <sub>2</sub> O <sub>3</sub> ..... 4.0 g/kg MgO ..... 2.1 g/kg	100 g
BCR-113	Potassium chloride - Elemental composition Certified values Ca ..... 1.03 g/kg Cl ..... 478.0 g/kg Water soluble K ..... 501.3 g/kg K .....502.5 g/kg Mg .....0.24 g/kg Na ..... 15.3 g/kg	100 g
BCR-114	Potassium sulphate - Elemental composition Certified values Ca ..... 9.4 g/kg Cl ..... 18.5 g/kg Water soluble K ..... 17.6g/kg K .....418.0 g/kg Na ..... 11.0 g/kg SO <sub>4</sub> ..... 533 g/kg	100 g
BCR-178	Calcium ammonium nitrate - Elemental composition Certified values Ca ..... 88.82 g/kg NH <sub>4</sub> -N ..... 130.44 g/kg NO <sub>3</sub> -N ..... 130.15 g/kg Total-N .....260.19 g/kg	100 g
BCR-179	Urea - Composition Certified values Total-N ..... 465.4 g/kg Uric-N .....460.9 g/kg Biuret ..... 10.37 g/kg	100 g
NIST-695	Multi-nutrient fertiliser - Elements Intended primarily for use in the evaluation of techniques employed in the analysis of multi-nutrient fertiliser materials and materials of a similar matrix. One unit of NIST-695 consists of approximately 70 g of jet-milled fertiliser. Certified values Major and minor constituent elements Ca ..... 2.26 ± 0.04 % Fe ..... 3.99 ± 0.08 % K ..... 11.65 ± 0.13 % Mg ..... 1.79 ± 0.05 % Mn ..... 0.305 ± 0.005 % Na ..... 0.405 ± 0.007 % Zn ..... 0.325 ± 0.005 % Trace elements As ..... 200 ± 5 mg/kg Ca ..... 16.9 ± 0.2 mg/kg Co ..... 65.3 ± 2.4 mg/kg Cr ..... 244 ± 6 mg/kg Cu ..... 1225 ± 9 mg/kg Hg ..... 1.955 ± 0.036 mg/kg Mo ..... 20.0 ± 0.3 mg/kg Ni ..... 135 ± 2 mg/kg Pb ..... 273 ± 17 mg/kg V ..... 122 ± 3 mg/kg Indicative values for further selected elements	70 g
NIST-120c	Phosphate rock, Florida - Constituents Certified values Al <sub>2</sub> O <sub>3</sub> ..... 1.30 % Fe <sub>2</sub> O <sub>3</sub> ..... 1.08 % K <sub>2</sub> O ..... 0.147 % MnO .....0.027 % Na <sub>2</sub> O .....0.52 % TiO <sub>2</sub> .....0.103 % U <sub>3</sub> O <sub>8</sub> ..... 0.0135 % V <sub>2</sub> O <sub>3</sub> ..... 0.016 % Values for the AFPC-method-Dependent concentrations also available	90 g

## Rocks, ceramic materials and minerals

Code	Product	Unit
NIST-694	Phosphate rock, western - Constituents Certified values Al <sub>2</sub> O <sub>3</sub> ..... 1.8 %      K <sub>2</sub> O ..... 0.51 %      SiO <sub>2</sub> ..... 11.2 % CaO ..... 43.6 %      MgO ..... 0.33 %      U ..... 0.01414 % CdO ..... 0.015 %      MnO ..... 0.0116 %      V <sub>2</sub> O <sub>5</sub> ..... 0.031 % F ..... 3.2 %      Na <sub>2</sub> O ..... 0.086 % Fe <sub>2</sub> O <sub>3</sub> ..... 0.79 %      P <sub>2</sub> O <sub>5</sub> ..... 30.2 % Indicative values for, Cr <sub>2</sub> O <sub>3</sub> , ZnO, TiO <sub>2</sub>	90 g
NIST-193	Potassium nitrate - Nitrogen and potassium Certified values K ..... 38.66 %      N ..... 13.85 %	90 g
<b>New</b> NIST-200B	Potassium dihydrogen phosphate - Phosphorous and potassium This Standard Reference Material <sup>®</sup> (SRM <sup>®</sup> ) is a highly purified and homogeneous lot of crystalline potassium dihydrogen phosphate (KH <sub>2</sub> PO <sub>4</sub> ). It is intended primarily for use as a working standard in the calibration and standardization of procedures employed in the fertilizer industry for the determination of potassium and phosphorus. A unit of NIST-200B consists of one bottle containing 90 g of crystalline potassium dihydrogen phosphate. Certified values Phosphorus ..... 22.769 % ± 0.010 %      Potassium ..... 28.735 % ± 0.018 % Indicative values for selected elements	90 g
<b>New</b> NIM-GBW06502	Ammonium dihydrogen phosphate - Nitrogen and phosphorous Certified values P ..... 26.85 %      N ..... 12.08 % Indicative values for Ca, Fe, Mg	30 g
<b>New</b> NIM-GBW06503	Potassium sulphate - Potassium Certified values K ..... 44.79 % Indicative values for Ca, Fe, Mg, Mn	40 g
<b>New</b> NIM-GBW06501	Urea - Nitrogen Certified values Biuret ..... 1.38%      N ..... 46.30% Indicative values for B, Ca, Fe, Mn	35 g

## Rocks, ceramic materials and minerals

Code	Product	Unit
NIST-1d	Limestone, Argillaceous - Constituents Certified values Na <sub>2</sub> O ..... 0.0109 %      P <sub>2</sub> O <sub>5</sub> ..... 0.0413 %      Mn ..... 0.0209 % MgO ..... 0.301 %      S ..... 0.1028 %      Fe <sub>2</sub> O <sub>3</sub> ..... 0.3191 % Al <sub>2</sub> O <sub>3</sub> ..... 0.526 %      K <sub>2</sub> O ..... 0.1358 %      ZnO ..... 0.0022 % SiO <sub>2</sub> ..... 4.080 %      CaO ..... 52.85 %      SrO ..... 0.0303 %	70 g
NIST-88b	Limestone, Dolomite - Constituents Collected near Skokie, Illinois, USA Certified values Al <sub>2</sub> O <sub>3</sub> ..... 0.336 %      K <sub>2</sub> O ..... 0.1030 %      P <sub>2</sub> O <sub>5</sub> ..... 0.0044 % CaO ..... 29.95 %      MgO ..... 21.03 %      SiO <sub>2</sub> ..... 1.13 % CO <sub>2</sub> ..... 46.37 %      MnO ..... 0.0160 %      SrO ..... 0.0076 % Fe <sub>2</sub> O <sub>3</sub> ..... 0.277 %      Na <sub>2</sub> O ..... 0.0290 % Indicative values for TiO <sub>2</sub> , L.O.I.* * Loss On Ignition	75 g
NCS DC60107A	Limestone - Constituents Certified values Al <sub>2</sub> O <sub>3</sub> ..... 0.22 %      MgO ..... 0.81 %      SO <sub>3</sub> ..... 0.018 % CaO ..... 54.03 %      MnO ..... 0.0067 %      TiO <sub>2</sub> ..... 0.010 % Cl ..... 0.0028 %      Na <sub>2</sub> O ..... 0.017 %      L.O.I.* ..... 43.12 % Fe <sub>2</sub> O <sub>3</sub> ..... 0.11 %      P <sub>2</sub> O <sub>5</sub> ..... 0.0081 % K <sub>2</sub> O ..... 0.84 %      SiO <sub>2</sub> ..... 1.09 % Indicative value for CO <sub>2</sub> , free SiO <sub>2</sub> * Loss On Ignition	50 g