

# SHERWOOD SCIENTIFIC FLAME PHOTOMETER MODEL 420Cs

CAESIUM and LITHIUM INTERNAL  
REFERENCE FOR ANALYSIS OF  
SODIUM, POTASSIUM AND LITHIUM



Алматы (7273)495-231  
Ангарск (3955)60-70-56  
Архангельск (8182)63-90-72  
Астрахань (8512)99-46-04  
Барнаул (3852)73-04-60  
Белгород (4722)40-23-64  
Благовещенск (4162)22-76-07  
Брянск (4832)59-03-52  
Владивосток (423)249-28-31  
Владикавказ (8672)28-90-48  
Владимир (4922)49-43-18  
Волгоград (844)278-03-48  
Вологда (8172)26-41-59  
Воронеж (473)204-51-73  
Екатеринбург (343)384-55-89

Иваново (4932)77-34-06  
Ижевск (3412)26-03-58  
Иркутск (395)279-98-46  
Казань (843)206-01-48  
Калининград (4012)72-03-81  
Калуга (4842)92-23-67  
Кемерово (3842)65-04-62  
Киров (8332)68-02-04  
Коломна (4966)23-41-49  
Кострома (4942)77-07-48  
Краснодар (861)203-40-90  
Красноярск (391)204-63-61  
Курск (4712)77-13-04  
Курган (3522)50-90-47  
Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13  
Москва (495)268-04-70  
Мурманск (8152)59-64-93  
Набережные Челны (8552)20-53-41  
Нижний Новгород (831)429-08-12  
Новокузнецк (3843)20-46-81  
Ноябрьск (3496)41-32-12  
Новосибирск (383)227-86-73  
Омск (3812)21-46-40  
Орел (4862)44-53-42  
Оренбург (3532)37-68-04  
Пенза (8412)22-31-16  
Петрозаводск (8142)55-98-37  
Псков (8112)59-10-37  
Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15  
Рязань (4912)46-61-64  
Самара (846)206-03-16  
Санкт-Петербург (812)309-46-40  
Саратов (845)249-38-78  
Севастополь (8692)22-31-93  
Саранск (8342)22-96-24  
Симферополь (3652)67-13-56  
Смоленск (4812)29-41-54  
Сочи (862)225-72-31  
Ставрополь (8652)20-65-13  
Сургут (3462)77-98-35  
Сыктывкар (8212)25-95-17  
Тамбов (4752)50-40-97  
Тверь (4822)63-31-35

Тольятти (8482)63-91-07  
Томск (3822)98-41-53  
Тула (4872)33-79-87  
Тюмень (3452)66-21-18  
Ульяновск (8422)24-23-59  
Улан-Удэ (3012)59-97-51  
Уфа (347)229-48-12  
Хабаровск (4212)92-98-04  
Чебоксары (8352)28-53-07  
Челябинск (351)202-03-61  
Череповец (8202)49-02-64  
Чита (3022)38-34-83  
Якутск (4112)23-90-97  
Ярославль (4852)69-52-93

Россия +7(495)268-04-70

Казахстан +7(7172)727-132

Киргизия +996(312)96-26-47

<https://sherwood.nt-rt.ru/> || [sdo@nt-rt.ru](mailto:sdo@nt-rt.ru)

# SHERWOOD SCIENTIFIC

## FLAME PHOTOMETER MODEL 420Cs

The M420Cs is Sherwood's newest addition to the Flame Photometer product line. Evolved from the well-established M420, the M420Cs provides a precision (%CV)  $\leq 0.5$ , now achievable with all new dual channel models: i.e. the M420 & M425.

Unique to the M420Cs, is addition of a Caesium reference channel. This enables the analyst to work with Caesium or Lithium as an internal reference. The M420Cs' additional internal reference option provides greater flexibility; operators have the ability to choose the internal reference element based on the sample matrix considerations or existing procedures developed for discontinued instrumentation such as the IL 943 Flame Photometer.

A practical example where the Caesium option is beneficial is analysis of Lithium in clinical samples while still being able to benefit from the improved precision achieved by use of an internal reference.

- On board firmware with blanking, calibration and sample routines.
- Simultaneous measurement of two out of three elements: Sodium, Potassium and/or Lithium.
- Linearised Sodium response over the expected clinical Sodium concentration range (1 in 200 sample dilution).
- Internal reference facility for improved precision.
- Automatic flame ignition and optimisation.
- Safety features including optical flame and low air pressure detection for fuel gas shut off.
- Two digital displays for calibration and analysis data of each channel; analogue outputs for use with chart recorders and some on-line analysers.
- A "no tools" maintenance approach allowing easy access to mixing chamber and burner assembly.
- RS232 for data output to a serial printer.

## PERFORMANCE

### Measurement Range

|          |                       |
|----------|-----------------------|
| Na Serum | 110.0 to 170.0 mmol/l |
| Na Urine | 0.0 to 199.9 mmol/l   |
| K Serum  | 0.00 to 10.00 mmol/l  |
| K Urine  | 0.0 to 200.0 mmol/l   |
| Li Serum | 0.00 to 3.00 mmol/l   |

### Reproducibility

|                   |                                       |
|-------------------|---------------------------------------|
| Na (140.0 mmol/l) | better than 0.5% CV (w/ Ref Facility) |
| K (5.00 mmol/l)   | better than 0.5% CV (w/ Ref Facility) |
| K (80.0 mmol/l)   | better than 0.5% CV (w/ Ref Facility) |
| Li (1.50 mmol/l)  | better than 0.8% CV (w/ Ref Facility) |

### Linearity

|                 |                  |
|-----------------|------------------|
| Na Serum within | $\pm 2$ mmol/l   |
| Na Urine within | $\pm 4$ mmol/l   |
| K Serum within  | $\pm 0.2$ mmol/l |
| K Urine within  | $\pm 2$ mmol/l   |
| Li Serum within | $\pm 0.2$ mmol/l |

### Dilution Factor

|                |                                |
|----------------|--------------------------------|
| Na Serum/Urine | 1 in 200 with de-ionised water |
| K Serum        | 1 in 200 with de-ionised water |
| K Urine        | 1 in 200 with de-ionised water |
| Li Serum       | 1 in 50 with de-ionised water  |

The above is correct for use with Propane. Results obtained from 20 replicates of the same sample, aspirating sample for 20 seconds, then water for 10 seconds. To achieve the stated specification the flame must be alight for a minimum of 30 minutes, with diluent being aspirated. (For a brand new, newly installed unit, that stabilisation is highly likely to be greater than 30 minutes).

## ITEMS INCLUDED

| CODE     | DESCRIPTION                                 | CODE     | DESCRIPTION                                             |
|----------|---------------------------------------------|----------|---------------------------------------------------------|
| 47542300 | M420Cs 2-CHANNEL CLINICAL FLAME PHOTOMETER  | 00156100 | SOLUTION; 140.0, 5.00 & 1.50 mmol/L Na, K & Li (100 ML) |
| 42008102 | ATOMISER STAINLESS STEEL COMPLETE           | 00156601 | SOLUTION, 10000 PPM CAESIUM (100 ML)                    |
| 00153420 | POWER SUPPLY UNIT, UNIVERSAL, IEC (no plug) | 00156603 | SOLUTION, 3 MOLAR LITHIUM (100 ML)                      |
| 40022002 | TUBE, DRAIN                                 | 10099010 | WIRE, ATOMISER CLEANING PK3                             |
| 00172043 | TUBE, PVC REINFORCED, 2 METRES              | 92609052 | LEAD, INSTRUMENT TO PRINTER/PC                          |
| 00172114 | TUBE, GAS 6.3 MM ID, 2 METRES               | 47171900 | LEAD, MAINS 2M BLACK 10A IEC, PLAIN                     |
| 40022003 | TUBE, ATOMISER INLET                        | 42591001 | MANUAL, OPERATOR                                        |

Алматы (7273)495-231  
Ангарск (3955)60-70-56  
Архангельск (8182)63-90-72  
Астрахань (8512)99-46-04  
Барнаул (3852)73-04-60  
Белгород (4722)40-23-64  
Благовещенск (4162)22-76-07  
Брянск (4832)59-03-52  
Владивосток (423)249-28-31  
Владикавказ (8672)28-90-48  
Владимир (4922)49-43-18  
Волгоград (844)278-03-48  
Вологда (8172)26-41-59  
Воронеж (473)204-51-73  
Екатеринбург (343)384-55-89

Иваново (4932)77-34-06  
Ижевск (3412)26-03-58  
Иркутск (395)279-98-46  
Казань (843)206-01-48  
Калининград (4012)72-03-81  
Калуга (4842)92-23-67  
Кемерово (3842)65-04-62  
Киров (8332)68-02-04  
Коломна (4966)23-41-49  
Кострома (4942)77-07-48  
Краснодар (861)203-40-90  
Красноярск (391)204-63-61  
Курск (4712)77-13-04  
Курган (3522)50-90-47  
Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13  
Москва (495)268-04-70  
Мурманск (8152)59-64-93  
Набережные Челны (8552)20-53-41  
Нижний Новгород (831)429-08-12  
Новокузнецк (3843)20-46-81  
Ноябрьск (3496)41-32-12  
Новосибирск (383)227-86-73  
Омск (3812)21-46-40  
Орел (4862)44-53-42  
Оренбург (3532)37-68-04  
Пенза (8412)22-31-16  
Петрозаводск (8142)55-98-37  
Псков (8112)59-10-37  
Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15  
Рязань (4912)46-61-64  
Самара (846)206-03-16  
Санкт-Петербург (812)309-46-40  
Саратов (845)249-38-78  
Севастополь (8692)22-31-93  
Саранск (8342)22-96-24  
Симферополь (3652)67-13-56  
Смоленск (4812)29-41-54  
Сочи (862)225-72-31  
Ставрополь (8652)20-65-13  
Сургут (3462)77-98-35  
Сыктывкар (8212)25-95-17  
Тамбов (4752)50-40-97  
Тверь (4822)63-31-35

Тольятти (8482)63-91-07  
Томск (3822)98-41-53  
Тула (4872)33-79-87  
Тюмень (3452)66-21-18  
Ульяновск (8422)24-23-59  
Улан-Удэ (3012)59-97-51  
Уфа (347)229-48-12  
Хабаровск (4212)92-98-04  
Чебоксары (8352)28-53-07  
Челябинск (351)202-03-61  
Череповец (8202)49-02-64  
Чита (3022)38-34-83  
Якутск (4112)23-90-97  
Ярославль (4852)69-52-93

Россия +7(495)268-04-70

Казахстан +7(7172)727-132

Киригия +996(312)96-26-47

<https://sherwood.nt-rt.ru/> || [sdo@nt-rt.ru](mailto:sdo@nt-rt.ru)