

HUMAN HEALTH

ENVIRONMENTAL HEALTH

DISCOVER
NEW HORIZONS
WITH RELIABLE
TECHNOLOGY

CHEMAGEN TECHNOLOGY
PRODUCTS AND METHODOLOGIES

For Research Use Only. Not for use in Diagnostic Procedures.





A GLOBAL LEADER IN HUMAN HEALTH AND ENVIRONMENTAL HEALTH

PerkinElmer is a global leader focused on improving the health and safety of people and the environment. Following the 2011 acquisition of chemagen GmbH by PerkinElmer, chemagen Technology has extended and advanced PerkinElmer's offerings to the molecular research markets.

CHEMAGEN – UNIQUE TECHNOLOGY FOR DNA/RNA ISOLATION

A crucial step in genetic testing is the isolation of high quality DNA or RNA. PerkinElmer's chemagen Technology offers flexible solutions in a huge variety of research market segments including, but not limited to, Biobanking/Human Genetics, HLA Typing, Virus and Bacteria Detection.

As the number of samples increases, the need for automation becomes more acute. Automation also offers better reproducibility and reliability in the isolation process. The key competence behind chemagen Technology is the isolation of genomic DNA and total RNA. This competence is expressed in chemagic Kit products, which contain proprietary magnetic particles with a high affinity to nucleic acids and low protein binding.

PerkinElmer has worked with chemagen for years to provide automated liquid handling platforms with DNA preparation capabilities.

chemagen Technology - The natural extension of PerkinElmer's business

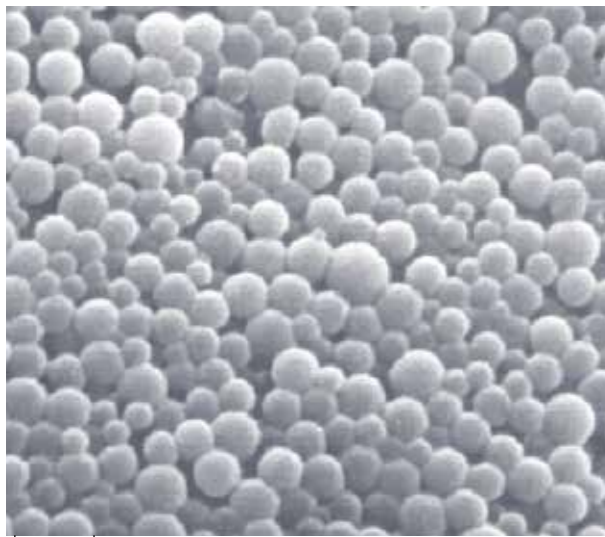
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MAGNETIC BEAD BASED NUCLEIC ACID ISOLATION

~ 3 µm

Electron-microscopical picture of M-PVA Magnetic Beads

Magnetic Bead based DNA/RNA Isolation

An essential step in genetic research is the isolation of high quality DNA or RNA. Many downstream applications such as PCR, sequencing and hybridization, cannot be processed with untreated sample material.

Large amounts of cellular or other contaminating materials in such complex mixtures often hinder many of the subsequent reactions and techniques¹. Thus a method for the efficient, reliable and reproducible isolation of nucleic acids from complex biological mixtures was developed by chemagen. The proprietary M-PVA Magnetic Beads (Fig. 1) consist of nanometer sized magnetite particles (shown as brown granules) encapsulated in a matrix of cross linked polyvinyl alcohol (illustrated as grey polymer chains; the cross links appear as red lines between these chains).

For the purification of nucleic acids (NA) from different biological sample materials, chemagen developed kits based on the use of specifically functionalized M-PVA beads showing a unique DNA binding capacity in the absence of chaotropic salts with minimal unspecific protein binding.

Please see page 12 for a listing of available chemagic Kits optimized for chemagen Technology Automation.

¹ Berensmeier, S., Magnetic particles for the separation and purification of nucleic acids. Applied Microbiology and Biotechnology 2006, 73, (3), 495-504.

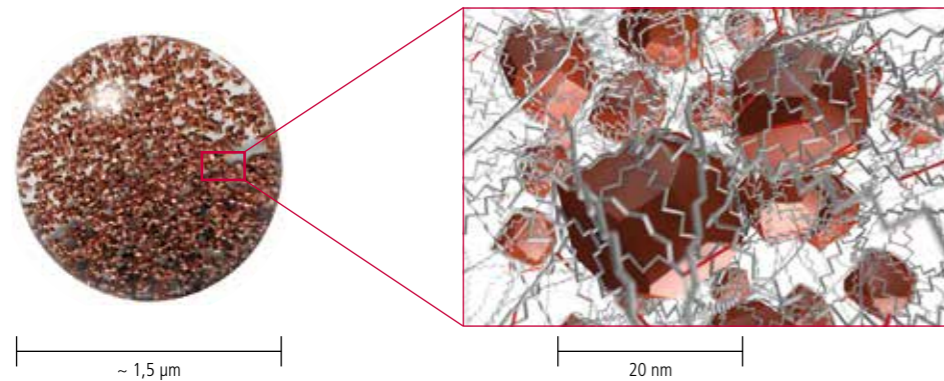
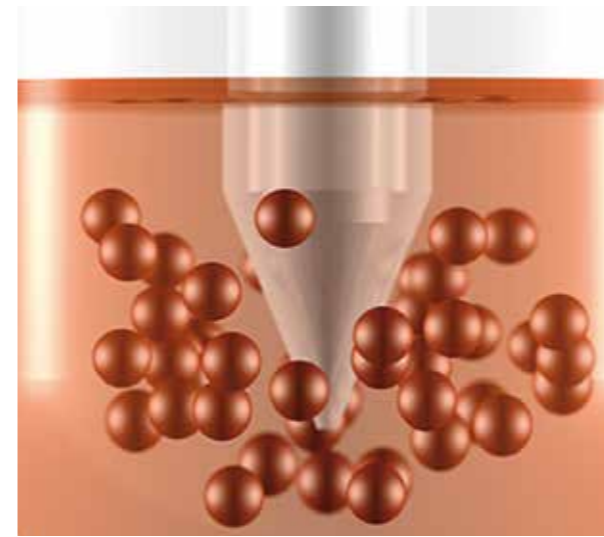


Fig. 1: Zoom view into a M-PVA Magnetic Bead, consisting of nanometer sized magnetite particles encapsulated in a matrix of cross linked polyvinyl alcohol.

Outstanding properties of M-PVA Magnetic Beads in NA Isolation

- High magnetite content (enables fast magnetic separation, even from large volumes)
- Hydrophilic bead surface with non-measurable binding properties for proteins resulting in very pure DNA
- DNA can easily be eluted at room temperature
- Processing of inhomogeneous/compromised sample material
- Ideal for automation (no vacuum station or centrifuges necessary)



MAGNETIC BEAD BASED NUCLEIC ACID ISOLATION

Automated Magnetic Separation Technology

Magnetic bead based isolation methods are ideal for automated processing. However, the efficiency of the whole procedure is dependent on the completion ratio of the magnetic separation and the performance of bead resuspension during binding,

washing and elution. When a magnet is applied to separate magnetic beads, the beads are attracted and form a pellet. In the process of DNA isolation from a biological sample material the bead pellet that is obtained after the binding step contains the DNA but also impurities like cell fragments, proteins, etc. The co-separation of these impurities is mainly due to physical reasons (inclusion in the bead pellet) and a set of washing steps finally ensures the required purity of the DNA. The efficiency of the washing steps is directly related to the ability to resuspend the magnetic bead pellet carefully and completely.

chemagen developed a very smart method for efficient bead resuspension (Fig. 2). Rotating needles result in stirring of the process liquid ensuring a complete resuspension of the pellet and releasing of the impurities. During this process the nucleic acid (NA) bead interaction remains and only light shearing forces impact the NA making sure that also long DNA fragments can be isolated. An additional advantage appropriate to the unique chemagen Technology is that the magnetic beads are transferred to the next processing solution instead of the liquid itself. This makes cross contamination impossible.

Unique property of the chemagic Separation Process

- The transfer of magnetic beads instead of liquids ensures no cross contamination of the samples during the isolation process
- Smooth and efficient resuspension technology ensures the isolation of long DNA fragments up to 200 kb



MAGNET ON ROTATION OFF

MAGNET OFF ROTATION ON

Fig. 2: Magnetic separation technology



CHEMAGIC AUTOMATION

High throughput Nucleic Acid Isolation

are an ideal solution for isolating nucleic acid from a huge variety of sample materials. The instruments are used with a chemagic Rod Head chosen to support your throughput and sample volume requirements. chemagic Rod Heads are available for medium or high throughput DNA/RNA isolation using sample volumes from 10 µl - 10 ml.

To meet automation needs, the systems can be extended with chemagic QA Software and the chemagic Dispenser. These allow LIMS-compatible bar code reading/sample tracking and automated buffer filling for all volume applications. Due to their modular set up, chemagic Automation can be integrated with standard liquid handling units. It represents the ideal solution in a huge variety of research market segments including, but not limited to, Biobanking/Human Genetics, HLA Typing, Virus and Bacteria Detection.

The chemagic 360 represents the latest version of chemagic Automation. This user friendly modular system benefits from more than 10 years' experience with the previous well-received high throughput chemagic MSM I instrument and facilitates high volume nucleic acid isolation within a compact benchtop system.

Based on PerkinElmer patented magnetic bead technology, chemagic Automation instruments, with the previous developed chemagic 360 and the well established chemagic MSM I,

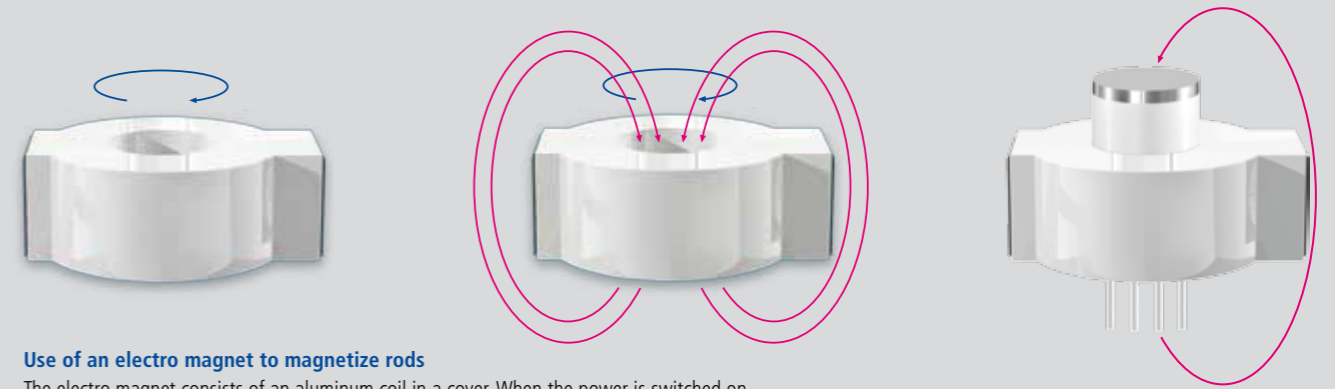
Key Features

- Sample volumes from 10 µl - 10 ml
- High throughput
- Huge kit portfolio
- No cross contamination
- Various sample materials in one run
- Integrates with liquid handling platforms

Benefits of the new developed chemagic 360

- Revolutionary compact benchtop design
- High volume nucleic acid isolation
- Convenient and improved sample management
- User-friendly modular system
- Bar code reading for sample tracking
- LIMS compatible log files

chemagic Rod Head	No. of Samples	Sample Volumes	Tubes/Plates	Processing Time	Product Number
12	1 - 12	1 ml - 10 ml	15 ml or 50 ml tubes	e.g. for 5 ml blood ~ 55 min	CMG-534
24	1 - 24	200 µl - 4 ml	24 single tubes, 24 well plates or 24 well plates XL	e.g. for 2 ml blood ~ 55 min	CMG-535
96	1 - 96	10 µl - 400 µl	96 single tubes or 96 well plates	e.g. for 10 µl blood ~ 15 min	CMG-536



Use of an electro magnet to magnetize rods

The electro magnet consists of an aluminum coil in a cover. When the power is switched on, an electric field (blue line) is generated. The electric field induces a magnetic field (red lines). The magnetic field lines are conducted through metal rods while the strongest magnetic field is at the end of the rods, which enables an efficient collection of the magnetic beads.

CHEMAGIC 360

Dimensions: 800 x 800 x 900 mm (L/W/H), available with three different rod heads



A chemagic Rod Head

Consisting of metal rods and gearbox with motor – mounted to a linear motion system ensuring its movements up and down through the hole in the electro magnet.

B Electro Magnet

Circular unit with a hole in the center.

C X-Axis

Circular / linear motion axis on which all required process solutions are placed in appropriate reaction vessels.

D Control Board

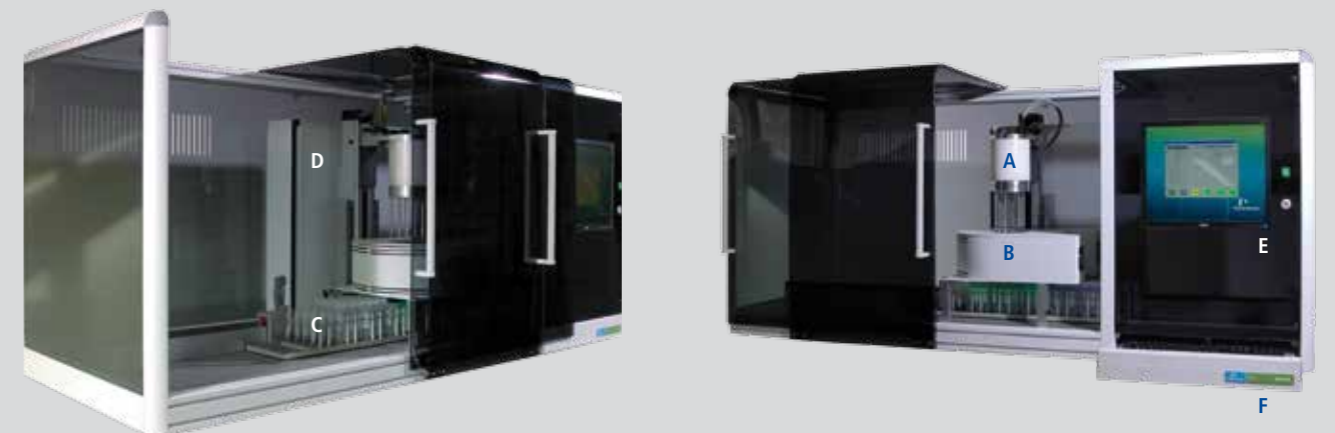
With two power supplies for electro magnet and motors, motor control cards and all other electronic parts.

E Integrated Screen

F Drawer with keyboard

CHEMAGIC MSM I

Dimensions: 2000 x 740 x 800 mm (L/W/H), available with three different rod heads





CHEMAGIC AUTOMATION ACCESSORIES

chemagic QA Software

The **chemagic QA Software** is the ideal solution for laboratories who require high quality assurance while they use the chemagic Automation for nucleic acid isolation. The connection to a standard LIMS system is unproblematic because the QA Software generates LIMS compatible log files.

Features at a glance

- Bar code reading/sample tracking
- LIMS compatible log files
- Up to date user management
- Easy navigation and set up
- Pre-installed protocols
- Tracking the progress of a running protocol



The status protocol shows within the main window of the chemagic QA Software: the running time, remaining time and the actual protocol step while running the protocol enabling the complete tracking of the process.

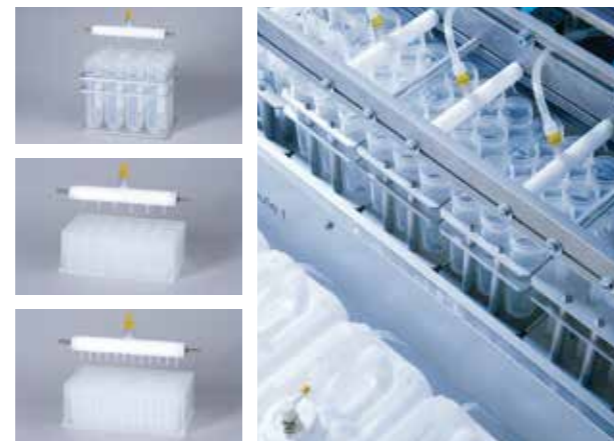
chemagic Dispenser

The use of the chemagic Automation simplifies and improves time consuming sample preparation steps like nucleic acid isolation significantly. By using the chemagic Dispenser, a particular chemagic Automation add-on, sample preparation is even faster and more comfortable. The chemagic Dispenser notably reduces hands-on time when preparing a chemagic Automation run. Independent of the amount of needed buffer, the additional unit prefills tubes/plates quickly and accurately. Variants of the chemagic Dispenser are available to suit the corresponding chemagic Rod Head formats (12, 24 and 96).

Features at a glance

- Reduces hands-on time
- Simultaneous filling of up to 8 different buffers with different buffer volumes
- Waste of buffer is minimized
- Based on membrane pump technology
- Fully integrated in the chemagic Automation
- Easy upgrade of a stand-alone chemagic Automation (plug and play)

The precise technology of the chemagic Dispenser is also integrated in the chemagic Prepito-D.



CHEMAGIC PREPITO®-D

Fast, compact, fully automated

The chemagic Prepito®-D is based on chemagen's proven technology for magnetic particle separation and represents the top quality sample preparation system in a compact benchtop instrument.

It utilizes many years of experience in automated nucleic acid isolation gained with the high throughput chemagic MSM I instrument. In combination with the Prepito™ Kits, it delivers high yield and purity of DNA/RNA, and ensures the success of your downstream application.

This innovative instrument realizes cost effectiveness through automated dispensing of buffers into standard plastic devices instead of using expensive pre-filled cartridges. The chemagic Prepito-D includes bar code reading and a USB port data transfer to support a high quality assurance. Hands-on time is minimized. Processing time is as short as 40 minutes for 1 - 12 samples per batch (for e.g. 250 µl blood).

Features at a glance

- 1 - 12 samples per run
- Small benchtop solution 620 x 520 x 550 mm (L/W/H)
- Integrated buffer dispensing
- Revolutionary resuspension technology
- Standard plastic devices (included in the Prepito Kits)
- Prepito Kits and pre-installed protocols for a huge variety of sample materials
- Quantitative yield, highest purity
- Sample sizes up to 1 ml
- Bar code reading
- LIMS compatible log files
- USB port

Product Name	Product Number	No. of Samples	Sample Volume	Bar code reading	Dispensing
chemagic Prepito-D*	2022-0020	1 - 12	100 µl - 1 ml	included	integrated

*Manufactured by PerkinElmer Inc., Wallac Oy, Turku, Finland

KITS FOR DNA/RNA ISOLATION



CHEMAGIC KITS SPECIAL FOR USE WITH THE CHEMAGIC AUTOMATION

The chemagic Automation instruments are designed to extract nucleic acids from diverse sample materials in three different configurations:

- LV** low volume configuration
- MV** medium volume configuration
- HV** high volume configuration

Associated with the configuration is the maximum number of samples that can be extracted per sample set and a sample volume range as indicated in the table on the right.

Volume Config.	Qty. of Samples	Sample Volume	chemagic Rod Head
LV	1 - 96	10 µl - 400 µl	96
MV	1 - 24	200 µl - 4 ml	24
HV	1 - 12	1 ml - 10 ml	12

GENOMIC DNA PREPARATION



Sample type Fresh or frozen whole human blood
Product chemagic DNA Blood Kit special

Volume Config.	Sample Size [µl]	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
LV	50	35	1 - 2	50 - 100	20 - 40	960	CMG-1072
LV	100	35	2 - 4	50 - 200	20 - 40	960	CMG-721
LV	250	55	5 - 10	200	25 - 50	960	CMG-746
LV	400	60	8 - 16	250	32 - 64	960	CMG-1091
MV	1,000	50	20 - 40	500	40 - 80	240	CMG-1086
MV	1,000 - 2,000	65	20 - 80	300 - 500	50 - 250	240	CMG-1097
MV	4,000	90	80 - 160	300 - 500	250 - 1,000	240	CMG-1074
HV	5,000	55	100 - 200	500	200 - 400	250	CMG-703
HV	7,000	50	140 - 280	500	300 - 500	250	CMG-715
HV	10,000	60	200 - 400	500	400 - 800	250	CMG-704

DNA isolation results from whole blood samples obtained with the chemagic MSM I

Sample Volume [ml]	Product Number	Elution Volume [µl]	No. of Samples	Average DNA Conc. [ng/µl]	Average DNA Yield [µg]	Average Ratio 260/280
1 ml whole blood	CMG-1086	500	753	160.4	32.1	1.9
3,5 ml frozen EDTA blood	CMG-703	500	4,800	155	77	1.9
4 ml EDTA blood	CMG-1074	500	137	313	156	2.0

Tab.1: Average DNA quality results from dedicated chemagic Blood Kits special.

Linear quantity of DNA – independent of blood volume

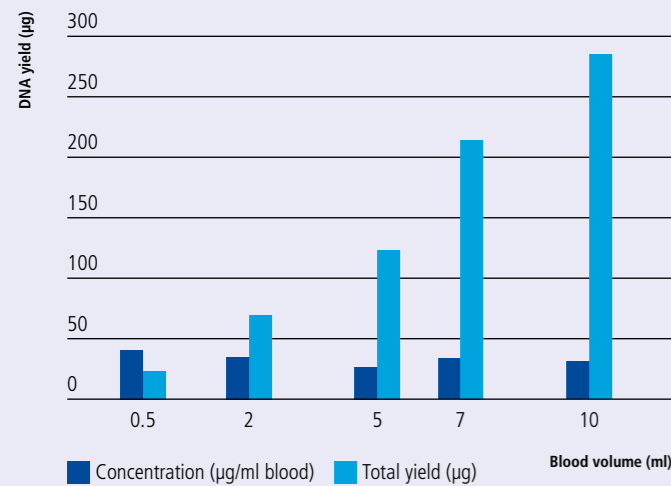


Fig. 1: Genomic DNA isolation yields from different blood volumes with the chemagic MSM I.

0.5 ml blood (average value from 50 samples)
 2 ml blood (average value from 2,000 samples)
 5 ml blood (average value from 1,500 samples)
 7 ml blood (average value from 1,200 samples)
 10 ml blood (average value from 50 samples)

Typical DNA concentration obtained from a healthy donor is 20 - 40 µg per ml blood.

EDTA and PAXgene blood reveal approximately 20 - 30 µg gDNA/ml blood

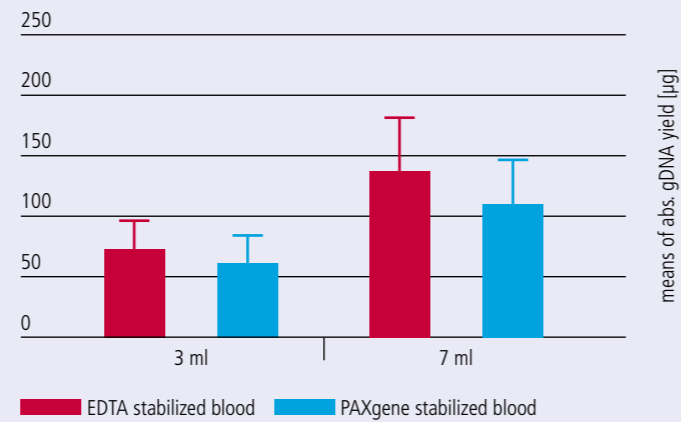


Fig. 2: Genomic DNA results from EDTA and PAXgene stabilized blood samples from 12 donors.

In comparison to other DNA isolation methods, chemagen technology does not show a "drop" in yield when isolating DNA from increasing blood volumes; therefore a linear increase of total yield (µg) according to the corresponding sample volume can be observed. DNA yield that is obtained using chemagic Kits and chemagen Separation Technology is of course dependent on the blood donor and the blood volume that is processed whereas the DNA concentration for different blood volumes shows constant values. „like this“

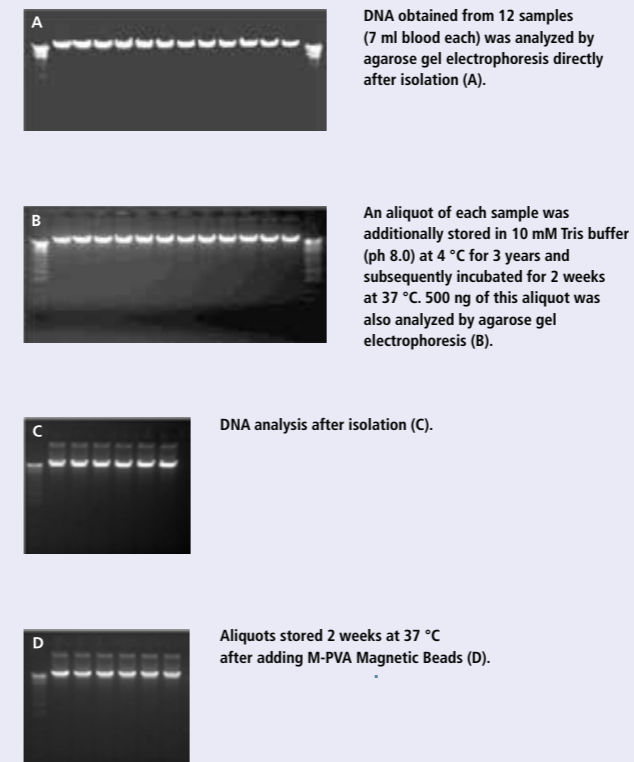
DNA stability - stress test

The extracted gDNA is routinely applied for Methylation Analysis, SSCP, Southern Blotting, MLPA, Transgenomics Wave, SNPlex, HLA Typing (SSP, SSO, SBT), SNP Typing/GWA, Sequencing/Next Generation Sequencing, Array and Multiplex Technologies

The chemagic DNA Blood Kits are dedicated for isolation of genomic DNA from:

- EDTA blood
- frozen blood
- citrated blood
- PAXgene® blood tubes

The stability of the DNA isolated with the chemagic DNA Blood Kit is examined by stress tests and long term storage. Neither the activity of DNases nor the catalyzation of DNA degradation by magnetic beads is observed.



DNA – sample quality

The following results show that the DNA sample quality is nearly independent of the treatment of the samples.

OD_{260/280} ratio ≈ 1.8 - 2.0, OD_{260/230} ratio > 2.0

Sample treatment

- 3 days, 4 °C
- 3 days, -20 °C
- 3 days, -20 °C, 2 x freeze and thaw
- 2 days, 40 °C, 1 day, 4 °C

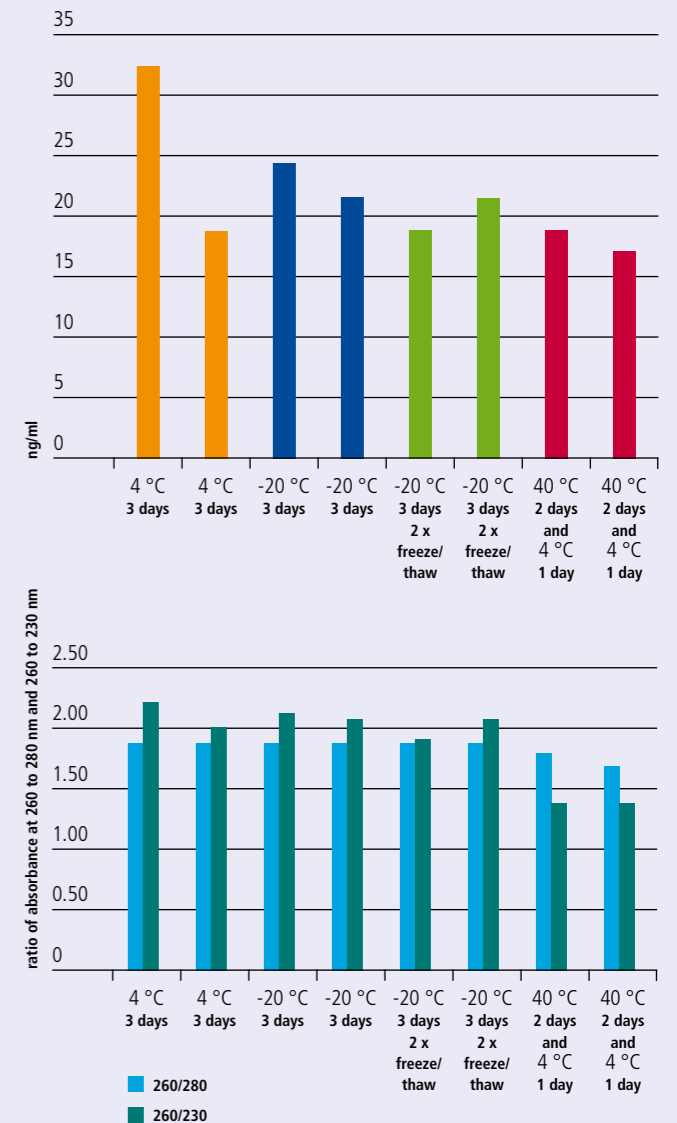



Fig. 3: DNA sample quality.


Data kindly provided by Life & Brain, Bonn, Germany.




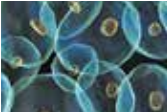
CHEMAGIC KITS SPECIAL FOR USE WITH THE CHEMAGIC AUTOMATION

GENOMIC DNA PREPARATION

 Sample type 3 - 6 mm paper filters punch out Product chemagic DNA Blood Spot Kit special							
Volume Config.	Sample Size	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
LV	3 - 6 mm paper filters punch out	45	0.5 - 2	50	10 - 40	960	CMG-1030


 Sample type Buffy Coat Product chemagic DNA Buffy Coat Kit special							
Volume Config.	Sample Size	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
LV	100 obtained from max. 1 ml blood	40	5 - 10	200	25 - 50	960	CMG-729
LV	200 obtained from max. 1 ml blood	70	10 - 20	250	40 - 60	960	CMG-713
MV	500 obtained from max. 6 ml blood	85	90 - 130	300 - 500	225 - 235	240	CMG-1080
HV	2,000 obtained from max. 10 ml blood	70	60 - 120	500	120 - 240	250	CMG-728


 Sample type Amniotic Fluid Product chemagic DNA Amniotic Fluid Kit special							
Volume Config.	Sample Size [ml]	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
HV	1	30	0.5 - 3	100	5 - 30	250	CMG-797

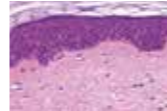
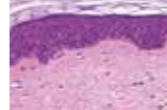
 Sample type Cell and Cell Pellets Product chemagic DNA Cell Kit special							
Volume Config.	Sample Size	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
HV	1.2 x 10 ⁷ cells	40	100 - 200	500	200 - 400	250	CMG-756

CHEMAGIC KITS SPECIAL FOR USE WITH THE CHEMAGIC AUTOMATION

GENOMIC DNA PREPARATION

 Sample type Saliva, optimized for DNA Genotek's Oragene® sample collection devices and nucleic acid stabilization chemistries Product chemagic DNA Saliva Kit special							
Volume Config.	Sample Size [ml]	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
MV	4	65	up to 150 (depending on donor)	300 - 500	300 - 500	240	CMG-1081
HV	4	60	up to 150 (depending on donor)	300 - 500	300 - 500	250	CMG-1035
HV	2	55	up to 75 (depending on donor)	300 - 500	180 - 300	250	CMG-1092

 Sample type Buccal Swab Product chemagic DNA Buccal Swab Kit special							
Volume Config.	Sample Size	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
LV	1 swab per prep.	35	1 - 3	100 - 200	10 - 20	960	CMG-748
MV	1 - 2 Bode™ swabs	45	10 - 25	100	100 - 250	240	CMG-1048

 Sample type Tissue, e.g. animal tissue or cells Products chemagic DNA Tissue Kit special							
Volume Config.	Sample Size	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
LV	10 mg	50	15 - 25 (2 - 4 mm mouse tail) 24 - 40 (liver)	200	75 - 125 (mouse tail) 120 - 200 (liver)	960	CMG-723
 Sample type Tissue, FFPE Products chemagic FFPE DNA Kit special							
LV	10 µm section or equivalent of FFPE tissue	55	depending on sample material	50 - 100	n.a.	960	CMG-1099

CHEMAGIC KITS SPECIAL FOR USE WITH THE CHEMAGIC AUTOMATION

CIRCULATING CELL FREE DNA

Volume Config.	Sample Size [ml]	Processing Time [min]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
HV	1	90	60 - 100	n.a.	250	CMG-1096
HV	4	100	60 - 100	n.a.	250	CMG-1101
MV	4	105	60 - 100	n.a.	240	CMG-1090

TOTAL RNA

Volume Config.	Sample Size [ml]	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
HV	2.5	100	7 - 16	200	35 - 80	250	CMG-1083
MV	2.5	105	7 - 16	200	35 - 80	240	CMG-1084

Volume Config.	Sample Size [ml]	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
HV	1	100	n.a.	200	n.a.	250	CMG-1093

Volume Config.	Sample Size [mg]	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
HV	50 mg	90	~ 40 µg (mice lung)	500	~ 80	250	CMG-1205

CHEMAGIC KITS SPECIAL FOR USE WITH THE CHEMAGIC AUTOMATION

VIRAL DNA/RNA, BACTERIAL DNA

Volume Config.	Sample Size [µl]	Processing Time [min]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
LV	300	55	50 - 100	n.a.	960	CMG-1033
HV	1,000	70	70 - 100	n.a.	250	CMG-1005
HV	2,400	70	70 - 100	n.a.	250	CMG-1001
HV	4,800	80	70 - 100	n.a.	250	CMG-1002
HV	9,600	80	70 - 100	n.a.	250	CMG-749

Volume Config.	Sample Size [µl]	Processing Time [min]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
LV	200	80	50 - 100	n.a.	960	CMG-1049

Viral and Bacterial Nucleic Acids

chemagic Viral NA/gDNA Kit special. All in one!

The chemagic Viral NA/gDNA Kit special is dedicated for the isolation of pathogen nucleic acids. The genomes can be isolated for research applications with chemagic kits; the product is not suitable for use in diagnostic applications:

- HAV, HBV, HCV, HGV, HIV, pB19, CMV, VZV, HPV, HSV (I + II), EBV, Noroviruses, Influenza, Adenoviruses, ...
- Chlamydia, MRSA, FSME, EHEC, Legionella, Listeria, Borrelia, N. Gonorrhoeae, Ureoplasma, Mycoplasma, ...

The particular benefit of this kit is the ability to isolate nucleic acids from different kind with sample materials in one run. All body fluids and other sample materials such as

- blood, serum/plasma, urine, stool suspensions, nasal-, vaginal- and buccal swabs, sputum, cerebrospinal fluid (CSF), puncture, cell culture, amniotic fluid, ...

can be isolated with just one kit – the chemagic Viral NA/gDNA Kit special. A good alternative for all blood free materials is the chemagic Viral DNA/RNA Kit special.

No cross contamination

A chess board test with stool suspensions either strongly positive or negative for Norovirus infection were positioned right next to each other in a 96 deep well plate. After the isolation process the extracted RNAs were analyzed in a Real Time PCR to see if any cross contamination occurred during the isolation process. The resulting PCR revealed that no cross contamination was evident.

Sensitivity Data

	HAV	HBV	HCV	HIV	Parvo B19	HEV
Detection limits (I.U./ml plasma pool)	2.6 ¹	0.7 ²	5.0 ²	8.9 ³	4.6 ³	4.7 ⁴

The chemagic Viral DNA/RNA Kit special in combination with the chemagic MSM I was used for the automated isolation of nucleic acids from 9.6 ml minipool plasma samples (96 x 100 µl each). The detection of viral NA was achieved by different inhouse and commercial assays.

Data kindly provided by ¹(German Red Cross) DRK-Blutspendedienst West, Hagen. ²DRK-Blutspendedienst Nord-Ost, Sachsen, Institut für Transfusionsmedizin Plauen; Data published in: Nukleinsäureextraktion für den hochsensitiven Virusnachweis, Dr. rer. nat. Knut Gubbe, Steffi Grosch, Labor Praxis, Artikel: 57-602-13-008, 2005.

³DRK-Blutspendedienst Baden-Württemberg-Hessen, Institut für Transfusionsmedizin Frankfurt.

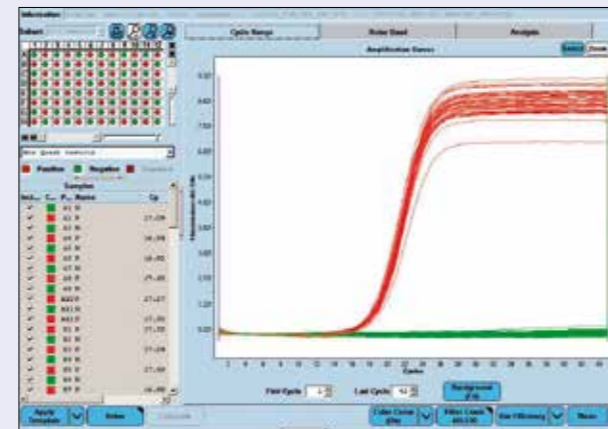
⁴Institut für Laboratoriums- und Transfusionsmedizin, Herz- und Diabeteszentrum Nordrhein-Westfalen, Universitätsklinik der Ruhr-Universität Bochum, Bad Oeynhausen, Germany.

Selection of routinely detected Pathogens after their nucleic acid has been isolated with chemagen Technology

Adenovirus	EBV	HPV	Listeria	Parvovirus
Bordetella sp.	EHEC	HSV 1 / HSV 2	MRSA	Ureaplasma sp.
Chlamydomphila sp.	Enterovirus	Influenzavirus	Mycoplasma sp. (resp., std.)	VZV
CMV	FSME	Legionella	Norovirus	

Sample materials that can be processed with chemagen Technology

culture	sputum	blood	urine
cerebrospinal fluid (CSF)	stool (animals)	EDTA-serum/plasma	vaginal swabs
puncture	swabs	enrichment culture	whole ticks
serum	BAL	stool suspensions	



Real Time PCR. The DNA was extracted with the chemagic Viral DNA/RNA Kit special. Positive and negative Norovirus samples were processed with the chemagic MSM I in one run. In the subsequent Real Time PCR no cross contamination was observed.



PREPITO KITS FOR USE WITH THE CHEMAGIC PREPITO-D

The chemagic Prepito-D is a compact benchtop instrument designed to extract DNA/RNA from diverse sample materials. It utilizes many years of experience in magnetic bead based nucleic acid isolation and delivers in combination with Prepito™ Kits high yield and purity of DNA/RNA to ensure the success of your downstream application.

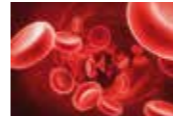

Nucleic acid purity

- OD_{260/280} ratio 1.8 - 2.0

- OD_{260/230} ratio > 2.0

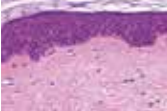
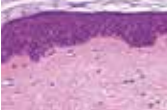
Product Name	Product Number	No. of Samples
chemagic Prepito-D	2022-0020	1 - 12
Sample Volume	Bar code reading	Dispensing
100 µl - 1 ml	included	integrated


GENOMIC DNA PREPARATION

	Sample type	Fresh or frozen whole human blood				
	Product	Prepito DNA Blood250 Kit				
Sample Size [µl]	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
250	40	5 - 10	200	25 - 50	180	CMG-2002
	Sample type	Fresh or frozen whole human blood				
	Product	Prepito DNA Blood600 Kit				
600	45	12 - 24	400	30 - 60	90	CMG-2004


PREPITO KITS FOR USE WITH THE CHEMAGIC PREPITO-D

GENOMIC DNA PREPARATION

Sample Size [µl]	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
 Sample type FFPE tissue Product Prepito FFPE Kit						
up to 5 mg FFPE tissue material	45	depending on sample material	50 - 100	n.a.	180	CMG-2027
 Sample type Tissue, e.g. animal tissue or cells Product Prepito DNA Tissue10 Kit						
2 - 4 mm mouse tail	40	15 - 25	200	75 - 125	180	CMG-2010
10 mg liver		24 - 40	200	120 - 200		

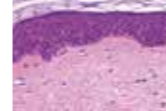
Sample Size	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
 Sample type Cytogenetic sample materials, eg. whole blood, tissue, pelleted amniotic fluid Product Prepito DNA Cyto Pure Kit						
250 µl blood 10 mg tissue 3-5 ml amniotic fluid	45	24 - 40 for tissue	200	120 - 200 for tissue	180	CMG-2034

CIRCULATING CELL FREE DNA

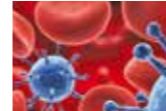
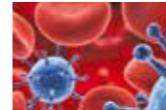
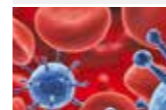
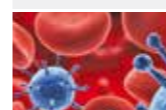
Sample Size	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
 Sample type Serum/plasma Product Prepito Circulating NA1k Kit						
1,000	140	n.a.	100	n.a.	180	CMG-2025

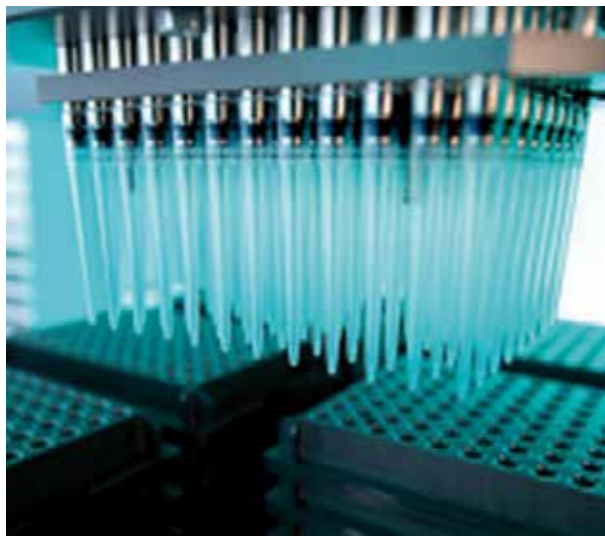
PREPITO KITS FOR USE WITH THE CHEMAGIC PREPITO-D

TOTAL RNA

Sample Size [mg]	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
 Sample type Tissue Product Prepito Total RNA Kit						
10	45	Brain 1 - 2 Kidney 7 - 9 Heart 2 - 3 Lung 7 - 8	200	Brain 5 - 10 Kidney 35 - 45 Heart 10 - 15 Lung 35 - 40	180	CMG-2035

VIRAL DNA/RNA, BACTERIAL DNA

Sample Size [µl]	Processing Time [min]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
 Sample type E.g. whole blood, serum/plasma, swabs, feces, urine, bacterial o/n, culture Product Prepito NA Body Fluid Kit						
200	75	4 - 8 for blood	50 - 100	40 - 80 for blood with an elution vol. of 100 µl	180	CMG-2021
 Sample type Serum/plasma Product Prepito Viral DNA/RNA200 Kit						
200	70	n.a.	50 - 100	n.a.	180	CMG-2015
 Sample type Serum/plasma Product Prepito Viral DNA/RNA300 Kit						
300	70	n.a.	50 - 100	n.a.	180	CMG-2017
 Sample type Serum/plasma Product Prepito Viral DNA/RNA1k Kit						
1,000	~ 100	n.a.	50 - 100	n.a.	180	CMG-2018



LIQUID HANDLING SOLUTIONS



CHEMAGIC KITS FOR MANUAL USE

Unique flexibility in Automation

Due to the modular set up of the chemagic Automation, the instruments can easily interface with standard liquid handling platforms e.g. PerkinElmer JANUS® Automated Workstation and meet thereby forming part of the laboratory's automation for its wider research needs. Please inquire at PerkinElmer for further information.

chemagic Kits for Liquid Handling

The following listing gives a selection of different chemagic LH Kits for the isolation of nucleic acids from various sample types. chemagic LH Kits can be adapted to most liquid handling instruments or other automated platforms e.g. PerkinElmer JANUS® Automated Workstation.

Product Name	Sample Type	Sample Size [µl]	Plate format	Preps per kit	Notes	Product Number
DNA clean-up						
chemagic SEQ Pure Kit LH	sequencing reaction mix	20	96	960	for dye removal	CMG-458
		10				CMG-459
chemagic PCR Pure Kit LH	PCR mix	20	96	960	clean up of PCR products	CMG-450
		10				CMG-451
Genomic DNA Preparation						
chemagic DNA Blood Kit LH	human blood	200	96	1,000		CMG-460
		100	96	960		CMG-462
		1,000	24	100		CMG-464
		400	48	960		CMG-468
chemagic Blood Spot Kit LH	3 - 6 mm paper filter punch outs		96	960		CMG-1202
chemagic DNA Forensic Kit LH	buccal swabs or 400 µl of other forensic material	swabs, 400	96	1,000		CMG-650
chemagic DNA Plant Kit low volume LH	plant tissue	e.g. 2-5 mg leaves, one seed	96	960		CMG-1029
Viral DNA and RNA Preparation						
chemagic Viral DNA/RNA Kit LH	serum/plasma	200	96	960	for any blood free body fluids	CMG-1201
chemagic Pathogen NA D Kit LH	body fluids e.g. whole blood, plasma, serum, urine, cerebrospinal fluid but also for different kind of swabs and feces suspensions	200	96	960	add on to product no. CMG-D-465, to perform external lysis of SurePath™ samples	CMG-D-465
chemagic Pathogen NA Extension D Kit LH						CMG-D-466

chemagic Kits for Manual Use are based on PerkinElmer's proprietary M-PVA Magnetic Bead Technology. To apply chemagic Kits manually a permanent magnet is required for bead collection. PerkinElmer offers manual magnetic particle separators known as chemagic Stands as listed in the table to the right.

chemagic Stands

Specially designed Racks for Manual Magnetic Separation in most common reaction vessels

For convenient separation of M-PVA Magnetic Beads from different volumes use our specially developed chemagic Magnetic Stands. Their specific design, with magnetic (NdFeB) and non-magnetic positions, makes working with 1.5 ml and 2.0 ml reaction tubes easy.

Product Name	Description	Product Number
chemagic Stand 2x12	for 12 x 1.5 ml tubes and 12 x 2.0 ml tubes	CMG-300
chemagic Stand 96	for 96 well plates	CMG-301
chemagic Stand 96 PCR	for 96 PCR plates	CMG-307




chemagic Stand 2x12
with 12 magnetic / non-magnetic positions for 1.5 ml tubes and 12 magnetic / non-magnetic positions for 2.0 ml tubes.

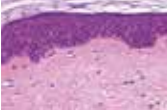
chemagic Stand 96
for 96-well MTPs and DWPs.


chemagic Stand 96 PCR
for 96 PCR Plates.

CHEMAGIC KITS FOR MANUAL USE


GENOMIC DNA PREPARATION

 Sample type Fresh or frozen whole human blood						
Product	Sample Size [µl]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
chemagic DNA Blood100 Kit	100	2 - 4	100	20 - 40	100	CMG-101
chemagic DNA Blood250 Kit	250	5 - 10	200	25 - 50	50	CMG-104

 Sample type Tissue, e.g. mouse tail, liver						
Product	Sample Size [mg]	Typical Yield [µg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
chemagic DNA Tissue10 Kit	10 mg tissue in 100 µl lysis buffer	15 - 25	100	150 - 250	100	CMG-152
chemagic DNA Tissue40 Kit	10 mg tissue in 100 µl lysis buffer	60 - 100	200	300 - 500	50	CMG-150

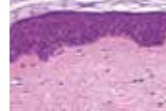
 Sample type Food						
Product	Sample Size [mg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number	
chemagic Food Basic Kit	200	100	n.a.	100	CMG-160	
chemagic Food Extension Kit*	2,000	100	n.a.	100	CMG-161	

*Only in conjunction with chemagic Food Basic Kit. Contains additional buffers to prepare up to 2 g food material.


 Sample type Cytogenetic sample materials, e.g. blood, tissue, cell pellets						
Product	Sample Size	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number	
chemagic DNA Cyto Pure Kit	e.g. 250 µl blood 10 mg tissue	200	n.a.	50	CMG-196	
	1 - 5 ml amniotic fluid	50 - 100				

CHEMAGIC KITS FOR MANUAL USE


mRNA

 Sample type Tissue, cells e.g. animal or plant tissue, cells					
Product	Sample Size	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
chemagic mRNA Direct Kit	scalable for 10 - 100 mg tissue 10 ³ - 10 ⁷ cells	50 - 100	n.a.	50	CMG-111


SEQUENCING PRODUCTS

 Sample type Sequencing products					
Product	Sample Size [µl]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
chemagic SEQ Pure Kit	5 - 20 (without ethanol)	20	n.a.	100	CMG-108

BACTERIAL DNA


 Sample type Bacterial Culture and Pellets					
Product	Sample Size [µl]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
chemagic DNA Bacterial Kit	200 (without ethanol)	100	n.a.	100	CMG-190

PLANT DNA

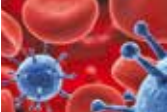
 Sample type Plant Material, e.g. seeds, leaves, callus tissue culture					
Product	Sample Size [mg]	Standard Elution Vol. [µl]	Typical Conc. [ng/µl]	Preps. per Kit	Product Number
chemagic DNA Plant Kit	20 - 50	100 - 200	n.a.	100	CMG-194

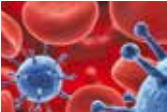
CHEMAGIC KITS FOR MANUAL USE

PCR PRODUCTS

 Sample type PCR products					
Product	Sample Size [mg]	Standard Elution Vol. [μ l]	Typical Conc. [ng/ μ l]	Preps. per Kit	Product Number
chemagic PCR Pure Kit	50 (scalable)	50	n.a.	100	CMG-105

VIRAL DNA/RNA, BACTERIAL DNA

 Sample type Body Fluids, e.g. whole blood, plasma, swabs, cerebrospinalfluid (CSF), urine, feces					
Product	Sample Size [mg]	Standard Elution Vol. [μ l]	Typical Conc. [ng/ μ l]	Preps. per Kit	Product Number
chemagic Viral NA/gDNA Kit	200	50 - 100	n.a.	50	CMG-192

 Sample type Serum/Plasma					
Product	Sample Size [mg]	Standard Elution Vol. [μ l]	Typical Conc. [ng/ μ l]	Preps. per Kit	Product Number
chemagic Viral DNA/RNA Kit	200	50	n.a.	100	CMG-193

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CT6521/30/0714-01 Printed in Germany