



Dr. Möller & Schmelz GmbH
Corporation for Applied Microbiology



Nutrient Media for Microbiological Quality Control in the Food and Beverage Industry

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Dr. Möller & Schmelz Applied Microbiology Corporation

Since 1986 **Dr. Möller & Schmelz** has been an experienced and innovative quality partner for the food and beverage industry. Our customers value us as a reliable and prompt supplier of high-quality culture media for microbiological quality control and quality assurance.

This makes it possible to meet the growing demands of health regulations, flexible sales markets, sustainable production processes, variable product specifications and strong brand image.

In the press and social networks, it can be followed directly how product quality affects sales success of food and drink. Anyone who promotes purity has to ensure that the products are flawless.

The team of **Dr. Möller & Schmelz** is committed to quality assurance in the food and beverage industry. We grow with the trust of our customers and pleasure in our work.

In addition, the developments at **Dr. Möller & Schmelz** are inspired by active scientific contacts with universities and institutes as well as by the exchange of operational know-how.

If you have any current questions, please do not hesitate to contact us.
We are at your service.



Michael Sawatzki
Graduate Biologist Michael Sawatzki
General Manager Dr. Möller & Schmelz GmbH

Nutrient Pad Sets (NPS)

Introduction

Nutrient pad sets (NPS) are sterile dehydrated nutrient culture media that are ready for immediate use after addition of sterile water. They are made of biologically inert cellulose cardboard that serves as a substrate for the nutrient solution. Since it does not bind the nutrients either chemically or physically, the nutrient components are completely available for the growth of microorganisms.

The composition of the various nutrient solutions used for the various NPS comply with the formulations specified in the relevant standards and regulations.

Nutrient pad sets have a number of advantages over conventional agar media: :

- Storage at room temperature
- Shelf life of up to 2 years
- Ready for immediate use after moistening
- Easy handling

Quality Assurance

Both the manufacturing process as well as the quality controls for the nutrient pad sets are integrated in the **M&S** quality management system according to DIN EN ISO 9001 and are based on GMP guidelines and DIN EN ISO 11133.

Each batch of **cellulose cardboard** that is used as substrate for the NPS is tested for thickness (according to DIN EN ISO 20534), grammage (according to DIN EN ISO 536) and water absorption capacity (in-house test method). It is also tested for growth-inhibiting substances.

The **Petri dishes** in which the impregnated nutrient pads are placed are manufactured under clean room conditions and their sterility is checked regularly.

The **impregnation solutions are produced** using components from certified suppliers only. The weighed portions of the individual components of the formulations are documented with their batch numbers to guarantee their traceability. The adjustment of the pH-value is also recorded. Processing continues as soon as the solutions have been produced, i.e. the cardboard pads are then impregnated.

The **drying** process that follows impregnation takes place under controlled conditions.



A service provider certified in accordance with EN ISO 13485 performs the **sterilisation** of the NPS in a validated process.

During the **final inspection** of the finished products, their sterility, recovery rates and if necessary any colour reactions with positive and negative microorganisms are tested. The NPS only leave our premises if they fulfil all of the requirements.

The batch-related **M&S** quality certificate that accompanies every package confirms that the **M&S** quality standards have been checked and met.

We at **Dr. Möller & Schmelz** are involved in quality assurance in the food and beverages industry.

Our customers value us as a fast and reliable supplier of high quality nutrient media for microbiological quality control and as a consultant for microbiological questions.



Instruction for Use of Nutrient Pad Sets (NPS)

In general it has to be made sure that all equipment is sterile and that the standard rules of microbiological work are followed.

Membrane filtration method

1. Open a pack of ten and remove a Petridish containing a nutrient pad.
2. Add 3 - 3.5 ml sterile, distilled or demineralized water to the nutrient pad in the Petridish. Moisture level is optimal, if an excess ring of liquid is clearly visible.
3. Open sealed envelope, remove membrane filter with sterile tweezers, place the membrane filter on top of the frit of the filter holder and put on the filter funnel.
4. Filter sample. Rinse with sterile water or peptone water and remove excess liquid carefully from the filter by extended vacuum. Note: For using the filtration device please follow the manufacturer's instruction.
5. Carefully remove the membrane filter from the frit with a sterile tweezers and place it on the prepared nutrient pad (pls. see above) without catching air bubbles. Incubate the Petridish with the lid facing upwards. The incubation conditions are dependent on the NPS-grade and the target microorganisms. Note: Growth and positive results with selective media are to be considered as indication only. For safe diagnosis further tests are necessary (e.g. "IMVIC-test").

Streak plate method

1. Open a pack of ten and remove a Petri dish containing a nutrient pad.
2. Add 3 - 3.5 ml sterile, distilled or demineralized water to the nutrient pad in the Petri dish. Moisture level is optimal, if an excess ring of liquid is clearly visible.
3. Open sealed envelope, remove membrane filter with sterile tweezers, place the membrane filter on top of the pre-wetted nutrient pad.
4. Pick up the sample with a sterile inoculation loop and spread it on the surface of the membrane.
5. Incubate the Petri dish with the lid facing upwards. The incubation conditions are dependent on the NPS-grade and the target microorganisms.



Moistening of the Nutrient Pad Sets (NPS)

There are many possible ways of moistening the NPS with the ideal volume of liquid (3 - 3.5 ml). We can offer two of these in our product range.

The quick and easy solution are **ampoules** filled with 3.5 ml of sterile, deionised water (article number 6105). Simply twist the top off and pour the content onto the NPS.

The volume of the **self-filling syringe** (article number 6100) can be infinitely varied up to 5.0 ml. The pre-set volume is exactly dosed sterile onto the NPS through a sterile syringe filter unit with a pore size of 0.2 µm. The syringe is then re-filled automatically with deionised or demineralised water from a reservoir.

Digital determination of colony counts^{*)}

Just scan the QR code (included in the product packaging) upload a picture of the NPS – and the result is reliably and accurately available in real time.

A free service for our customers.



^{*)} Free service from **M&S**, powered by OCULYZE



Product Range

NPS to determine the number of heterotrophic, mesophilic bacteria

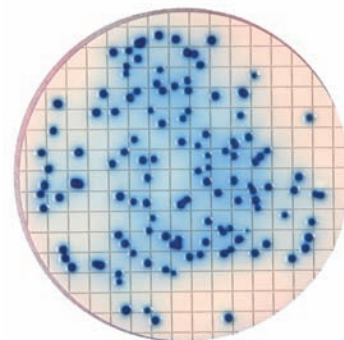
The number of heterotrophic, mesophilic growing bacteria provides an indication of the general hygiene status of samples. Different nutrient media are recommended or specified for their determination depending on various regulations, standards or internal standards.



Data sheets	NPS type	No. 50 / 100 units	Application	Recommended membrane filter	Recommended incubation condition	Growth
	Caso-NPS	1030 / 1030-H	To determine the number of colonies in water, food, cosmetic and other test materials.	Green with grid, pore size 0.45 µm	1 - 3 days at 37 °C	Beige, also coloured if pigments are formed.
	mTGE-NPS	1113 / 1113-H	To determine the number of colonies in water, food and other test materials.	Green with grid, pore size 0.45 µm	1 - 3 days at 37 °C	Beige, also coloured if pigments are formed.
	Plate Count-NPS	1140 / 1140-H	To determine the number of colonies in water, milk and other food.	Green with grid, pore size 0.45 µm	2 - 3 days at 30 °C	Beige, also coloured if pigments are formed.
	R2A-NPS	1155 / 1155-H	To determine the number of colonies in water and other test materials. The poor medium offers undemanding and stressed water bacteria optimum growth conditions at low temperatures over longer periods of incubation.	Green with grid, pore size 0.45 µm	3 - 5 days at 20 °C or 1 - 3 days at 35 °C	Beige, also coloured if pigments are formed.
	Standard-NPS	1190 / 1190-H	To determine the number of colonies in water, waste water and beverages.	Green with grid, pore size 0.45 µm	2 - 3 days at 20 °C or 1 - 2 days at 30 °C	Beige, also coloured if pigments are formed.
	Standard I-NPS	1191 / 1191-H	To determine the number of colonies in water, waste water and beverages.	Green with grid, pore size 0.45 µm	2 - 3 days at 20 °C or 1 - 2 days at 30 °C	Beige, also coloured if pigments are formed.
	Standard TTC-NPS *	1200 / 1200-H	To determine the number of colonies in water, waste water and beverages.	Green with grid, pore size 0.45 µm	2 - 3 days at 20 °C or 1 - 2 days at 30 °C	Through the addition of 2,3,5-triphenyltetrazolium chloride (TTC) all of the colonies appear to be reddish on account of the formation of formazan from TTC. This greatly facilitates the optical evaluation.
	Yeast Extract-NPS	1081 / 1081-H	To determine the number of colonies in water and waste water.	Green with grid, pore size 0.45 µm	2 - 3 days at 30 °C	Beige, also coloured if pigments are formed.

* 2,3,5-Triphenyltetrazoliumchloride

Detailed technical data sheets can be downloaded via the QR code and at www.moeller-schmelz.de



E. coli on mFC-NPS



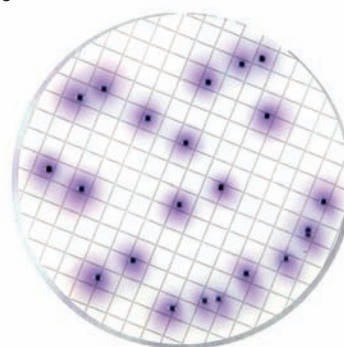
NPS for the detection and identification of *E. coli* and coliform bacteria

The presence of coliform bacteria and *E. coli* in particular is an indicator of faecal contamination. Whereas the majority of these enterobacteria are quite harmless, some representatives of this group can cause serious health problems. The test of food and beverages for the absence of these microorganisms before their release for trade is therefore regulated in ordinances.

Data sheets	NPS type	No. 50 / 100 units	Application	Recommended membrane filter	Recommended incubation condition	Growth
	Colichrom-NPS	1035 / 1035-H	For the selective and rapid quantitative detection and differentiation of <i>E. coli</i> , coliform and non-coliform bacteria in water, waste water and beverages.	White with grid, pore size 0.45 µm	21 - 24 hours at 36 ± 2 °C	Due to chromogenic compounds, <i>E. coli</i> forms blue colonies, the other coliform bacteria red colonies and the non-coliform microorganisms beige ones. Secondary gram-positive bacteria are inhibited by bile salts.
	ECD MUG-NPS *	1080 / 1080-H	For the selective and direct quantitative detection of <i>E. coli</i> in water, waste water and beverages.	White with grid, pore size 0.45 µm	18 - 24 hours at 44 °C	The higher incubation temperature of 44 °C supports the growth of <i>E. coli</i> and at the same time inhibits the development of secondary bacteria. Colonies of <i>E. coli</i> are fluorescent under UV light (366 nm) and turn cherry red after indole staining. Secondary gram-positive bacteria are inhibited by bile salts. A further identification is not necessary according to the Swiss Food Code..
	Endo-NPS	1090 / 1090-H	To detect coliform bacteria in water, waste water and other samples.	White with grid, pore size 0.45 µm	20 ± 4 hours at 37 ± 1 °C	Colonies of coliform bacteria show a red colour, caused by the presence of fuchsine. <i>E. coli</i> strains develop a more intensive colour, with some strains even developing a metallic sheen. On account of a higher incubation temperature the development of <i>E. coli</i> is encouraged and the growth of secondary bacteria inhibited at the same time. Secondary gram-positive bacteria are also inhibited by bile salts.
	MacConkey-NPS	1098 / 1098-H	For the selective detection and differentiation of enterobacteriaceae in waste water, foods and other test materials.	White with grid, pore size 0.45 µm	18 - 24 hours at 37 ± 1 °C	<i>E. coli</i> forms red other coliform bacteria pink-coloured colonies. The colonies of Salmonella and Shigella remain colourless. Secondary gram-positive bacteria are inhibited by bile salts.
	mFC-NPS	1100 / 1100-H	For the detection of faecal coliform bacteria in waste water and other test materials.	White with grid, pore size 0.45 µm	16 - 24 hours at 44 °C	The higher incubation temperature of 44 °C supports the growth of <i>E. coli</i> and at the same time inhibits the development of secondary bacteria. <i>E. coli</i> usually forms blue colonies after 16 hours. Secondary gram-positive bacteria are inhibited by bile salts.
	Tergitol TTC-NPS **	1220 / 1220-H	For the detection of coliform bacteria in water, waste water and other samples.	White with grid, pore size 0.45 µm	18 - 24 hours at 37 ± 1 °C	The fermentation of lactose, which all coliform bacilli are able to do, produces acid that turn the pH-indicator yellow. <i>E. coli</i> forms small yellowish colonies after 12 - 16 hours and later larger yellow-orange colonies with a yellow halo. Secondary lactose-negative bacteria form red colonies, some with a bluish halo. The colour depends on the respective strain. Secondary gram-positive bacteria are inhibited by bile salts.

* 4-Methylumbelliferyl-β-D-Glucuronide ** 2,3,5-Triphenyltetrazoliumchloride

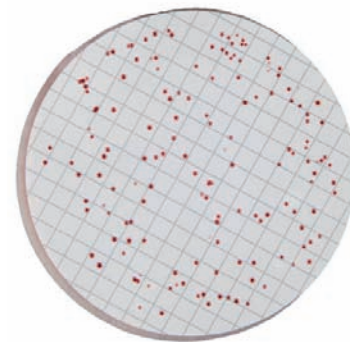
Detailed technical data sheets can be downloaded via the QR code and at www.moeller-schmelz.de



E. coli on Colichrom-NPS

NPS for the detection of enterococci

Enterococci, which were formerly classified as streptococci, play an important role in the intestinal tract of humans and animals and are also used in the production of food. However, some representatives of these bacteria can cause serious illnesses in people with weakened immune systems. Tests of drinking, mineral and table waters are thus compulsory.



Enterococcus faecalis on Azide-NPS

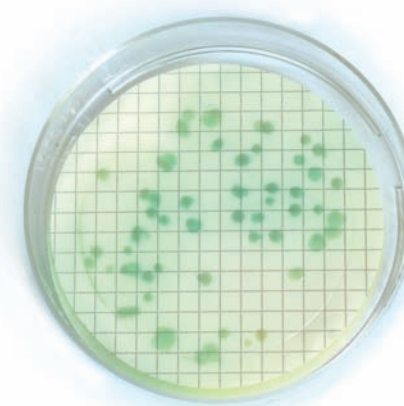


Data sheets	NPS type	No. 50 / 100 units	Application	Recommended membrane filter	Recommended incubation condition	Growth
	Azide-NPS	1010 / 1010-H	For the detection of enterococci in water and other test materials.	White with grid, pore size 0.45 µm	44 ± 4 hours at 37 ± 1 °C	Enterococci form small, dark-red colonies. The growth of secondary bacteria is inhibited by azide.

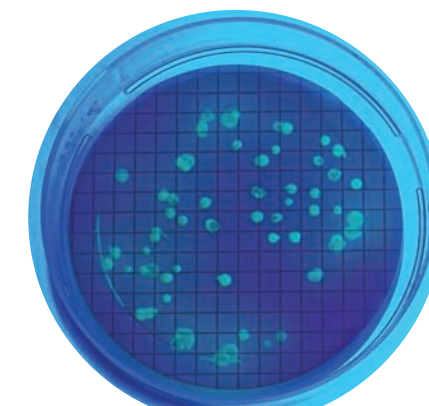
Detailed technical data sheets can be downloaded via the QR code and at www.moeller-schmelz.de

NPS for the detection and determination of pseudomonads

Pseudomonads are ubiquitous. They can be found in water and soil as well as on and in plants and animals. Some representatives of these aerobic, gram-negative bacteria can be dangerous for humans. Tests of drinking, mineral, table and bathing water for pseudomonads is thus prescribed by law.



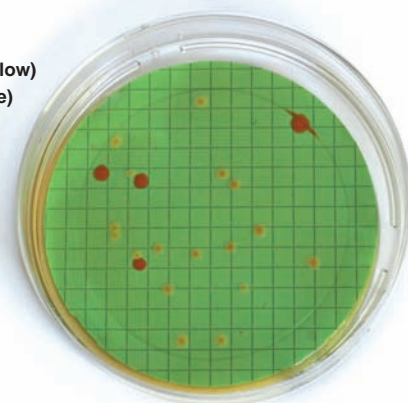
Ps. aeruginosa on Pseudomonas CN-NPS



Ps. aeruginosa on Pseudomonas CN-NPS under UV-light











Data sheets	NPS type	No. 50 / 100 units	Application	Recommended membrane filter	Recommended incubation condition	Growth
	Cetrimide-NPS	1040 / 1040-H	For the detection of <i>Ps. aeruginosa</i> in water and cosmetic products as well as other test materials.	White with grid, pore size 0.45 µm	44 ± 4 hours at 37 ± 1 °C	<i>Ps. aeruginosa</i> form blue-green colonies with a blue halo. The growth of secondary bacteria is inhibited by cetrimide.
	Pseudomonas CN-NPS	1145 / 1145-H	For the detection of <i>Ps. aeruginosa</i> in water, waste water and other test materials.	White with grid, pore size 0.45 µm	44 ± 4 hours at 37 ± 1 °C	<i>Ps. aeruginosa</i> form blue-green colonies with a blue-green halo. The intensity of the colouring may differ and depends on the strain. The growth of secondary bacteria is inhibited by cetrimide and nalidixic acid.

Detailed technical data sheets can be downloaded via the QR code and at www.moeller-schmelz.de

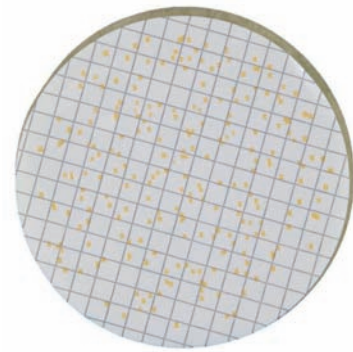


NPS for the detection of yeasts and moulds

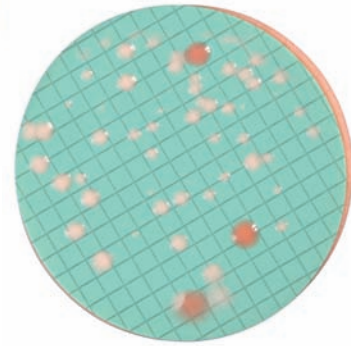
Just like certain bacteria, yeasts and moulds play an important role in the production of food, for example beer, wine, cheese and bakery products. However, some representatives are unwanted in certain production processes since they lead to off-flavours, have a negative effect on the shelf life of the food or can even cause serious health problems for consumers. Production processes thus have to be monitored with respect to these microorganisms.

Data sheets	NPS type	No. 50 / 100 units	Application	Recommended membrane filter	Recommended incubation condition	Growth
	Brettanomyces-NPS	1025 / 1025-H	For the detection of brettanomyces yeasts in wine, beer and beverages containing fruit juice.	Green with grid, pore size 0.45 µm	4 - 7 days at 25 °C	Brettanomyces yeasts form yellow to yellow-orange colonies with a yellow halo and are thus easy to differentiate from the generally white to cream-coloured colonies of other yeasts, which are furthermore largely inhibited by actidione.
	Lysine-NPS	1095 / 1095-H	For the selective detection of "wild yeasts" in breweries.	Black with grid, pore size 0.8 µm	2 - 5 days at 25 °C	Only wild yeasts can use lysine as a sole source of nitrogen. They generally form white to cream-coloured, but occasionally also reddish colonies. Culture yeasts display no growth.
	Malt Extract-NPS	1099 / 1099-H	For the selective detection of yeasts and moulds in beverages, food and other test materials.	Black with grid, pore size 0.6 µm	2 - 5 days at 25 - 30 °C	Yeasts form white to cream-coloured, occasionally also reddish colonies. Colonies of moulds are initially white with clearly visible aerial mycelium (velvety) and become coloured when forming conidia. The low pH-value of the medium inhibits the growth of most bacteria. Acid-tolerant bacteria, however, may occasionally appear as secondary flora.
	mGreen Y & M-NPS	1105 / 1105-H	For the detection of yeasts and moulds in sugar and beverages containing sugar.	Black with grid, pore size 0.8 µm	2 - 3 days at 25 - 30 °C	The acid produced by the fermentation of sugar through yeasts and moulds turns the pH-indicator from blue-green to yellow and leads to yellowish colonies, some with a yellow halo. Non-acid-formers, on the other hand, are blue-green. The low pH-value of the medium inhibits the growth of most bacteria.
	OGY-NPS	1115 / 1115-H	For the selective detection of yeasts and moulds in foods, fruit juices and other test materials.	Black with grid, pore size 0.6 µm	2 - 5 days at 25 - 30 °C	Yeasts form white to cream-coloured, occasionally also reddish colonies. The colonies of moulds are initially white with clearly visible aerial mycelium (velvety) and become coloured when forming conidia. The low pH-value of the medium and the presence of oxytetracycline largely inhibit the growth of bacteria.
	Osmophile-NPS	1130 / 1130-H	For the detection of osmophilic and osmotolerant yeasts and moulds in sugar, sweets and food containing sugar.	Black with grid, pore size 0.8 µm	5 - 7 days at 25 - 30 °C	Yeasts form white to cream-coloured colonies. The colonies of moulds are initially white with clearly visible aerial mycelium (velvety) and become coloured when forming conidia. The high sugar content inhibits the growth of bacteria and non-osmotolerant yeasts and moulds.
	PRY-NPS	1143 / 1143-H	For detection and enumeration of preservative resistant yeasts, e.g. Zygosaccharomyces.	Black with grid, pore size 0.45 µm	3 - 5 days at 25 °C	White to beige
	Sabouraud-NPS	1160 / 1160-H	For the detection of yeasts and moulds in cosmetic products, packaging material and for pure culture.	Black with grid, pore size 0.8 µm	2 - 5 days at 25 - 30 °C	Yeasts form white to cream-coloured, occasionally also reddish colonies. The colonies of moulds are initially white with clearly visible aerial mycelium (velvety) and become coloured when forming conidia. The low pH-value of the medium inhibits the growth of most bacteria.
	Schaufus-Pottinger-NPS	1180 / 1180-H	For the detection of yeasts and moulds in sugar and beverages containing sugar.	Black with grid, pore size 0.8 µm	2 - 3 days at 25 - 30 °C	The acid produced by the fermentation of sugar through yeasts and moulds turns the pH-indicator from blue-green to yellow and leads to yellowish colonies, some with a yellow halo. Non-acid-formers, on the other hand, are blue-green. The low pH-value of the medium inhibits the growth of most bacteria.
	Wort-NPS	1260 / 1260-H	For the detection of yeasts and moulds in beverages, foods and other test materials.	Black with grid, pore size 0.6 µm	2 - 3 days at 25 °C	Yeasts form white to cream-coloured, occasionally also reddish colonies. The colonies of moulds are initially white with clearly visible aerial mycelium (velvety) and become coloured when forming conidia. The low pH-value of the medium inhibits the growth of most bacteria.

Detailed technical data sheets can be downloaded via the QR code and at www.moeller-schmelz.de










Staphylococcus aureus
on Chapman-NPS



Yeast mixed culture
on Orange Serum-NPS



**NPS for the detection
of special microorganisms
or groups of microorganisms**

Data sheets	NPS type	No. 50 / 100 units	Application	Recommended membrane filter	Recommended incubation condition	Growth
	BAT-NPS	1015 / 1015-H	For the selective detection of <i>Alicyclobacillus sp.</i> in beverages containing sugar.	White with grid, pore size 0.45 µm	2 - 5 days at 43 - 45 °C	<i>Alicyclobacillus sp.</i> form cream-coloured colonies. The growth of other microorganisms is inhibited by the low pH-value and the high incubation temperature.
	Bismuth Sulfite-NPS	1250 / 1250-H	For the selective detection of salmonellae in water, food and other samples.	White with grid, pore size 0.45 µm	24 - 48 hours at 37 °C	Salmonellae form dark-brown to black colonies, usually with a light border and black halo ("fish eye").
	Chapman-NPS	1050 / 1050-H	For the selective detection of pathogenic staphylococci on foods and cosmetic test materials.	White with grid, pore size 0.45 µm	24 - 48 hours at 37 °C	<i>Staphylococcus aureus</i> forms yellow colonies with a yellow halo. The high concentration of sodium chloride largely inhibits the growth of secondary bacteria.
	Dextrose Tryptone-NPS	1070 / 1070-H	To determine the number of colonies of mesophilic microorganisms and to detect thermophilic spore-forming bacteria in sugar and food.	White with grid, pore size 0.45 µm	2 - 3 days at 30 °C (mesophilic) or 1 - 2 days at 55 °C (thermophilic)	"Flat-sour" colonies (<i>Bacillus coagulans</i>) are greenish-yellow with a yellow halo.
	Orange Serum-NPS, pH 5.5	1120 / 1120-H	For the detection of acidophilic and acidotolerant microorganisms in beverages and food.	Green with grid, pore size 0.45 µm	2 - 3 days at 30 °C	Due to the composition and the low pH-value, both yeasts and moulds as well as acidotolerant bacteria can grow. Demanding lactobacilli can also develop under anaerobic incubation condition.
	Orange Serum-NPS, pH 3.1	1121 / 1121-H	For the detection of acidophilic and acidotolerant microorganisms in beverages and food.	Green with grid, pore size 0.45 µm	2 - 3 days at 30 °C	Due to the composition and the low pH-value, both yeasts and moulds as well as acidotolerant bacteria can grow. Demanding lactobacilli can also develop under anaerobic incubation condition.
	Weman-NPS	1240 / 1240-H	For the detection of mucigenous bacteria on sugar, beverages containing sugar and food.	Green with grid, pore size 0.45 µm	2 - 3 days at 30 °C	Slime-forming microorganisms (e.g. <i>Leuconostoc sp.</i>) form colourless, water drop-like colonies.

Detailed technical data sheets can be downloaded via the QR code and at www.moeller-schmelz.de



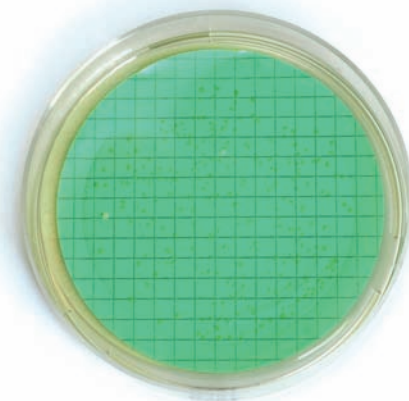
NPS for the detection of lactic acid bacteria

Lactic acid bacteria are a heterogeneous group of anaerobic, but usually aerotolerant bacteria, all of which are able to ferment glucose to lactic acid. Although lactic acid bacteria play an important role in the production of food, the metabolic products of some representatives are unwanted in products from the beverages industry since they lead to off-flavours and spoilage.

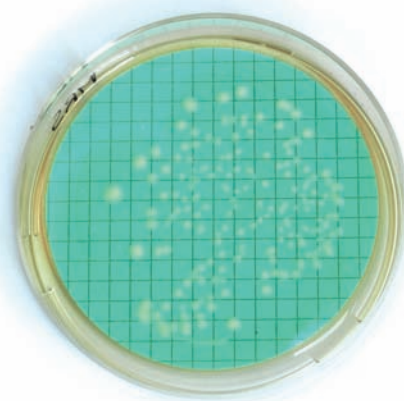
Routine tests for lactic acid bacteria in the production processes thus play an important role.

Data sheets	NPS type	No. 50 / 100 units	Application	Recommended membrane filter	Recommended incubation condition	Growth
	Beer-NPS	1020 / 1020-H	For the detection of beer-spoiling bacteria, including the genera <i>Lactobacillus</i> , <i>Pediococcus</i> and <i>Zymomonas</i> .	Green with grid, pore size 0.45 µm	2 - 4 days at 30 °C under anaerobic conditions (microaerophilic)	The growth of yeasts and moulds is suppressed by Actidione.
	MRS-NPS	1110 / 1110-H	For the detection of lactic acid bacteria in soft drinks, foods and other test materials.	Green with grid, pore size 0.45 µm	2 - 4 days at 28 °C under anaerobic conditions (microaerophilic)	The growth of yeasts and moulds is suppressed by Actidione.
	Wine-NPS	1230 / 1230-H	For the selective detection of wine-spoiling bacilli, including the genera <i>Leuconostoc</i> , <i>Lactobacillus</i> und <i>Pediococcus</i> . <i>Acetobacter</i> can also be detected in anaerobic conditions.	Green with grid, pore size 0.45 µm	2 - 5 days at 30 °C under anaerobic conditions (microaerophilic)	The growth of yeasts and moulds is suppressed by Actidione.

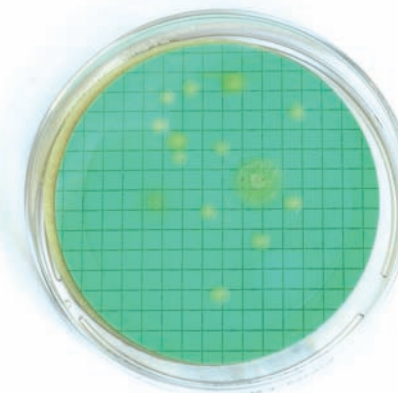
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Mixed culture of *Lactobacillus plantarum* and *Pediococcus pentosaceus* on Beer-NPS



Lactobacillus plantarum on MRS-NPS



White wine sample on Wine-NPS

This is our customer Römerwall Naturbrunnen und Getränke GmbH & Co. KG saying:

„We have been using the culture media from Dr Möller & Schmelz for over 10 years. We really appreciate the consistently high product quality, delivery reliability and the fair prices. Also the personal contact that has been built up over many years to both employees and management gives us the safety to get reliable results in our microbiological quality control to be able to deliver flawless beverages to our customers.“

Ordering information Nutrient Pad Sets

The nutrient pads are offered as a complete set in 2 different pack sizes with 50 or 100 pieces. The packaging units contain the sterile nutrient pads in sterile Petri dishes and sterile, individually packed membrane filters with a diameter of 50 mm.

Your requirements regarding the type of membrane filter or the alternative diameter of 47 mm can be considered.

Also membrane filters for the most common membrane dispenser systems are available.

Please feel free to contact us.

NPS type	50 units	100 units
Azide-NPS	1010	1010-H
BAT-NPS	1015	1015-H
Beer-NPS	1020	1020-H
Bismuth Sulfite-NPS	1250	1250-H
Brettanomyces-NPS	1025	1025-H
Caso-NPS	1030	1030-H
Cetrimide-NPS	1040	1040-H
Chapman-NPS	1050	1050-H
Colichrom-NPS	1035	1035-H
Dextrose Tryptone-NPS	1070	1070-H
ECD MUG-NPS *	1080	1080-H
Endo-NPS	1090	1090-H
Lysine-NPS	1095	1095-H
MacConkey-NPS	1098	1098-H
Malt Extract-NPS	1099	1099-H
mFC-NPS	1100	1100-H
mGreen Y & M-NPS	1105	1105-H
MRS-NPS	1110	1110-H
mTGE-NPS	1113	1113-H



NPS type	50 units	100 units
OGY-NPS	1115	1115-H
Orange Serum-NPS, pH 5.5	1120	1120-H
Orange Serum-NPS, pH 3.1	1121	1121-H
Osmophile-NPS	1130	1130-H
Plate Count-NPS	1140	1140-H
PRY-NPS	1143	1143-H
Pseudomonas CN-NPS	1145	1145-H
R2A-NPS	1155	1155-H
Sabouraud-NPS	1160	1160-H
Schaufus-Pottinger-NPS	1180	1180-H
Standard-NPS	1190	1190-H
Standard-I NPS	1191	1191-H
Standard TTC-NPS **	1200	1200-H
Tergitol TTC-NPS **	1220	1220-H
Weman-NPS	1240	1240-H
Wine-NPS	1230	1230-H
Wort-NPS	1260	1260-H
Yeast Extract-NPS	1081	1081-H

* 4-Methylumbelliferyl-β-D-Glucuronide ** 2,3,5-Triphenyltetrazoliumchloride

Ready-to-use Agar Media and Broth

Introduction

M&S sterile ready-to-use media are filled in autoclavable and break-proof polycarbonate bottles (50 ml and 250 ml) or glass tubes (20 ml). The composition of the various types of media, comply, like the NPS with the formulations specified in the pertinent standards and regulations.

Whereas the liquid media can be used immediately, the agar media first have to be remelted in a water bath at 95 - 100 °C. Once they have cooled down to around 50 °C you can pour agar plates in different sizes and thicknesses to meet your individual demands.

The shelf life of the ready-to-use media in unopened containers is 3 - 9 months – depending on the types. The exact shelf life is indicated in the respective technical data sheets.

Generally the **M&S** ready-to-use media are offered in three different pack sizes.

However, not all types of nutrient medium are available in all sizes in the standard range.

Please refer to the overview on the following pages.

Other pack sizes are possible on request or for larger order quantities.

Please feel free to contact us.



Mixed culture of *E. coli* and *Enterobacter aerogenes* on Endo-Agar



BfW-Broth for Wildtype Yeasts with indicator
For the realistic implementation of the analysis, 1 ml of hopped beer was first added to the broth and only then was inoculated with the yeast strains. The incubation was carried out aerobically for 6 days at 25°C (*B. bruxellensis*) and 2 days at 25°C (Wildtype strain) – from the left:
1. negative control 2. *Brettanomyces bruxellensis* DSM 70001
3. Wildtype yeast from young wine



Quality Assurance

Just like the nutrient pad sets, the production processes and quality control for our ready-to-use nutrient media are integrated in the **M&S** quality management system and are based on the GMP guidelines and DIN EN ISO 11133.

The broth and agar media are produced using components from certified suppliers only. The weighed portions of the individual components are documented with their batch numbers to guarantee their traceability and the adjustment of the pH-value is also recorded. Careful filling and sterilisation ensures that the quality of the individual nutrient media batches remain unaffected.

During the final control of the end products, sterility, recovery rates and if necessary any colour reactions with positive and negative microorganisms are tested. The nutrient media only leave our premises if they fulfil all of the requirements.

The batch-related **M&S** quality certificate that is enclosed with every package confirms that **M&S** products have been checked according to our quality standards and that they meet these.



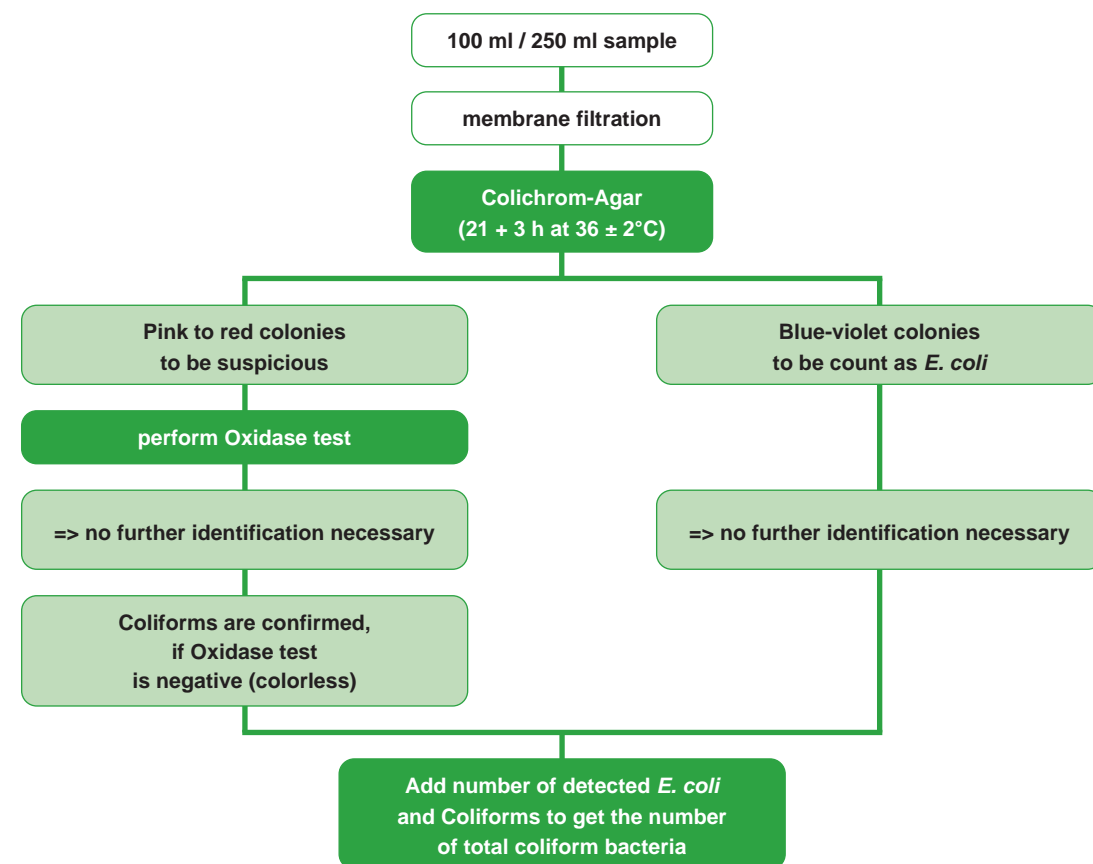
Tryptophane Peptone-Water –
positive reaction with clearly visible cherry-red ring (left), in the presence of *E. coli* and colorless in the case of a negative reaction (right)



Enterococcus faecalis
on Bile Esculin Azide-Agar

Making agar plates with Ready-to-use Agar

1. Remove the bottle or tube from the packaging.
2. Loosen the cap to allow the pressure generated during heating to escape.
However, do not remove the cap completely!
3. Place the bottle or tube in a pre-heated water bath (95 - 100 °C).
4. Incubate until the agar is completely liquid.
5. Remove the bottle or tube from the water bath and allow it to cool to around 50 °C.
6. Pour the agar into sterile Petri dishes.
Guide volumes are 15 - 20 ml for a 90 mm dish and 10 ml for a 60 mm dish.
7. Allow the agar to solidify.
8. Poured plates should be stored in the dark at 4 - 18 °C for a maximum of 7 - 10 days depending on the type of nutrient medium.
To prevent the plates from drying out, we recommend storing them in plastic bags.



Test scheme with M&S Colichrom-Agar, items 4028 or 5025



Diastaticus-Broth with Durham tube

For the realistic performance of the analysis, 1 ml of hopped beer was first added to the broth and only then was inoculated with the yeast strains. The incubation was carried out aerobically for 4 days at 25 °C – from the left:

1. negative control
2. *Saccharomyces diastaticus* DSM 70487
3. *Saccharomyces diastaticus* wild type strain from contaminated beer

This is what our customer Familienbrauerei M. Ketterer GmbH & Co. KG says:

„The Dr. Möller & Schmelz GmbH has long been one of our valued suppliers of microbiological culture media. We feel very confident by the product quality and reliability to agreed delivery dates as well as the simple and direct communication. The trusting cooperation supports us in ensuring the high quality standards that we place on our beverages.“

Custom-made products are also possible for small quantities

The range of M&S ready-to-use nutrient media is aligned to the needs of the food and beverages industry.














If you

- cannot find the nutrient medium you are looking for in our standard range
- need a special composition or a special pH-value for an existing nutrient medium
- would prefer a pack size that is more convenient for your needs

then simply contact us.

We will check the feasibility of your requirements and will prepare a non-committal offer.

Ordering information Ready-to-use Agar










Data sheets	Nutrient medium Standard	Item-No. (Size)
	Azide Dextrose-Broth, 1 x concentrated, with membrane filters MineralwV, TrinkwV	5140 (25 Tests)
	Azide Dextrose-Broth, 2 x concentrated TrinkwV	5010 (4 x 100 ml)
	BAT-Agar with membrane filters	4012 (24 x 10 ml) 5012 (4 x 125 ml)
	Beer-Agar	5015 (4 x 250 ml)
	BfB-Broth for Beer spoiling bacteria	4008 (25 x 20 ml)
	BfW-Broth for Wild yeasts	4056 (25 x 20 ml)
	Bile Esculin Azide-Agar MineralwV, TrinkwV, EN ISO 7899	5250 (25 x 20 ml) 5251 (4 x 250 ml)
	Caso-Agar, TSA EP, USP, DIN EN ISO 9308-1	4020 (25 x 20 ml) 5020 (4 x 250 ml)
	Caso-Broth, TSB EP, USP	4021 (25 x 20 ml) 5023 (4 x 250 ml)
	Cetrimide-Agar DEV, EP, USP	4025 (25 x 20 ml) 5021 (4 x 250 ml)
	Colichrom-Agar TrinkwV, DIN EN ISO 9308-1	4028 (25 x 20 ml) 4028-100 (100 x 20 ml) 5025 (4 x 250 ml) 5025-24 (24 x 250 ml)
	Copper Sulphate-Agar	5039 (4 x 250 ml)
	Crystal Violet-Agar	4051 (25 x 20 ml) 5038 (4 x 250 ml)
	Diastaticus-Agar	4027 (25 x 20 ml) 4027-100 (100 x 20 ml)



Data sheets	Nutrient medium Standard	Item-No. (Size)
	Diastaticus-Broth, with Durham tube	4029 (25 x 20 ml) 4029-100 (100 x 20 ml)
	DRCM-Broth, dehydrated MineralwV, TrinkwV	4030 (25 Tests, 20 ml samples) 5160 (25 Tests, 50 ml samples)
	Endo-Agar APHA	4040 (25 x 20 ml) 5030 (4 x 250 ml)
	Enterococcus Selective-Agar Slanetz und Bartley MineralwV, TrinkwV, EN ISO 7899	5240 (25 x 20 ml) 5241 (4 x 250 ml)
	Gelatine-Agar MineralwV, TrinkwV	4045 (25 x 20 ml) 4045-100 (100 x 20 ml) 5035 (4 x 250 ml) 5035-24 (24 x 250 ml)
	King B-Agar MineralwV, TrinkwV	5270 (25 x 20 ml) 5271 (4 x 250 ml)
	Lactose-Broth, 1 x concentrated, with Durham tube and membrane filters MineralwV, TrinkwV	5130 (25 Tests)
	Lactose-Broth, 2 x concentrated TrinkwV	5040 (4 x 100 ml) 5040-24 (24 x 100 ml)
	Lactose-Broth, 6 x concentrated	5044 (4 x 250 ml) 5044-24 (24 x 250 ml)
	Lactose TTC Tergitol-Agar	5200 (25 x 20 ml) 5201 (4 x 250 ml)
	Lysine-Agar	4055 (25 x 20 ml) 5042 (4 x 250 ml)



Data sheets	Nutrient medium Standard	Item-No. (Size)
	Malachite Green-Broth, 1 x concentrated, with membrane filters MineralwV, TrinkwV	5150 (25 Tests)
	Malachite Green-Broth, 2 x concentrated MineralwV	5050 (4 x 100 ml) 5050-24 (24 x 100 ml)
	Malt Extract-Agar	4060 (25 x 20 ml) 4060-100 (100 x 20 ml) 5060 (4 x 250 ml) 5060-24 (24 x 250 ml)
	Malt-Broth, with Durham tube	4058 (25 x 20 ml) 5059 (4 x 250 ml)
	MRS-Agar	4061 (25 x 20 ml) 4061-100 (100 x 20 ml) 5061 (4 x 250 ml) 5061-24 (24 x 250 ml)
	MRS-Broth	4062 (25 x 20 ml) 5062 (4 x 250 ml)
	MRS-Broth, with indicator	5063 (4 x 250 ml)
	Nutrient-Agar TrinkwV, DEV, DIN EN ISO 16266	4080 (25 x 20 ml) 4080-100 (100 x 20 ml) 5080 (4 x 250 ml) 5080-24 (24 x 250 ml)
	Nutrient-Broth Sterility test, e.g.	4090 (25 x 20 ml) 5081 (4 x 250 ml)
	Orangeserum-Agar APHA	4095 (25 x 20 ml) 5085 (4 x 250 ml) 5085-24 (24 x 250 ml)
	Orangeserum-Agar pH 3.4, with tartaric acid	4097 (21 x 20 ml)
	Plate Count-Agar APHA	4100 (25 x 20 ml) 5090 (4 x 250 ml) 5090-24 (24 x 250 ml)
	Pseudomonas CN-Agar TrinkwV, DIN EN ISO 16266	5280 (25 x 20 ml) 5281 (4 x 250 ml)

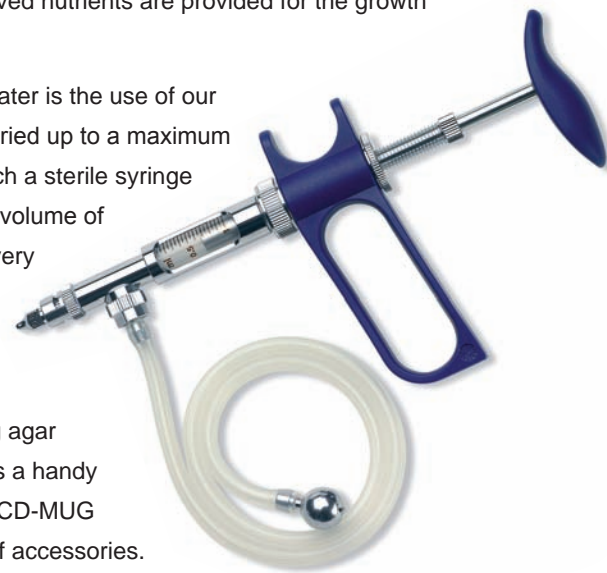
Data sheets	Nutrient medium Standard	Item-No. (Size)
	R2A-Agar EP, USP	4125 (25 x 20 ml) 5095 (4 x 250 ml)
	Rinsing solution	5029 (4 x 250 ml) 5029-24 (24 x 250 ml)
	Rinsing solution, with Tween	5128 (4 x 250 ml) 5128-24 (24 x 250 ml)
	RV-Broth	4007 (25 x 10ml)
	RV-Broth, with Swabs	4017 (60 Tests)
	Sabouraud-Agar ILV, EP, USP	4130 (25 x 20 ml) 5100 (4 x 250 ml)
	Standard-Agar	4135 (25 x 20 ml) 4135-100 (100 x 20 ml) 5101 (4 x 250 ml) 5101-24 (24 x 250 ml)
	Tryptophane Peptone-Water TrinkwV, DIN EN ISO 9308-1	5220 (25 x 10 ml)
	Wort-Agar	4150 (25 x 20 ml) 5110 (4 x 250 ml) 5110-24 (24 x 250 ml)
	Yeast Extract-Agar TrinkwV, DIN EN ISO 6222	4047 (25 x 20 ml) 4047-100 (100 x 20 ml) 5036 (4 x 250 ml) 5036-24 (24 x 250 ml)
	YGC-Agar	4170 (25 x 20 ml) 5120 (4 x 250 ml)

Accessories

One very useful accessory are **M&S special tweezers**. These can be used after filtration to roll up membrane filters and place them into liquid media in narrow-neck bottles easily.

An ideal complement to the nutrient pads are the **ampoules with 3.5 ml of sterile water**. They contain exactly the right amount of water for an optimum moistening of the nutrient pads. The excess fluid is necessary to replace the water that evaporates during incubation and keep the nutrient pads wet. This ensures that the dissolved nutrients are provided for the growth of the cells on the surface of the membranes.

A further way of moistening the NPS with sterile water is the use of our **self-filling syringe**. Its volume can be infinitely varied up to a maximum of 5 ml and it has a Luer-Lock connector onto which a sterile syringe filter unit can be fitted. This means that the preset volume of sterile water is dosed onto the nutrient pad with every stroke and the syringe is simultaneously refilled with water from a reservoir via a hose. This is ideal for large number of samples.



Petri dishes with a diameter of 60 mm for pouring agar plates, **autoclavable bottles** and **tubes** as well as a handy **UV lamp for the fluorescent test**, e.g. with the ECD-MUG NPS or Cetrimide agar round off the **M&S** range of accessories.

Ordering information Accessories

Accessories	Description	Item-No.
M&S Petri dishes	sterile, AD lid: 60 mm, ID base: 55 mm, height: 12 mm, 500 pieces	6060-500
Self-filling Syringe	volumen adjustable up to 5 ml, Luer-Lock-connector, autoclavable	6100
Sterile water	5 x 10 ampoules with 3.5 ml each for wetting the Nutrient Pad Sets	6105
UV lamp	wavelength 366 nm, for the ECD-method, battery included	6110
Special forceps	for easy transfer of membrane filters into tubes or bottles	6120



Notes, Questions, Comments

Please do not hesitate to contact us: Phone +49 (0)551 6 67 08 | service@moeller-schmelz.de
Thank you very much, Your **M&S** Team

List of abbreviations

APHA	American Public Health Association	MineralwV	Mineral and Table Water Directive
DAkkS	Germany's National Accreditation Body	NPS	Nutrient Pad Set
DEV	German Standard Method	nm	Nanometer
DIN	German Industrial Standard	µm	Micrometer
EN	European Standard	TrinkwV	German Drinking Water Directive
EP	European Pharmacopeia	USP	United States Pharmacopeia
ISO	International Standardisation Organisation	UV	Ultraviolet

Disclaimer

The information contained in this brochure reflects our current level of knowledge and is only a general description of our products and possible applications. We do not assume any liability for the completeness, correctness, freedom from errors and appropriateness of this information and its use. It is the sole responsibility of the user to assess the suitability of the product for a particular application. We reserve the right to change this information and the product details at any time, in particular due to changes in legal provisions.



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