



Product Information

Bacteriological test reagents for serotyping

Are you looking for the serological confirmation of suspicious colonies?

FOR SALMONELLA, SHIGELLA, YERSINIA AND COLI DIAGNOSTICS



Are you looking for the serological confirmation of suspicious colonies?

sifin diagnostics gmbh offers a comprehensive line of specific test reagents for serotyping in clinical and veterinary diagnostics.

Our tests are based on monoclonal antibodies. This leads to a strong and specific agglutination without cross reaction.

All our antibodies have been developed in-house and are manufactured in our company. Our products are offered as ready-to-use reagents in dropper bottles or as bulk to IVD companies.

Our portfolio comprises:

- Salmonella diagnostics
- Shigella diagnostics
- Yersinia diagnostics
- Coli diagnostics

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Departments

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Bacteriological Test Reagents

DIAGNOSTICS WITH PASSION



Our test reagents are used to provide serological evidence of and to serotype pathogenic *Enterobacteriaceae* from test material of human and other origin in microbiological diagnostics. They are intended to be used with the slide agglutination test. If the bacterial strain being tested has an antigen corresponding to the detection range of the test reagent, this antigen is bound to the specific antibody when they are mixed together. As a result of the antigen-antibody reaction, significant visible agglutination of the strain is observed. After propagating on selective or selective-indicator culture media, any suspect colonies are investigated using biochemical and serological methods. The serological identification starts with the omnivalent or the polyspecific test reagents. It must be noted that bacteria from the culture media with inhibitory additives can show weakened reactions. The test reagents are absorbed immunosera from rabbits or a mixture of absorbed immunosera from rabbits and monoclonal antibodies or they contain monoclonal antibodies only.

Group specific test reagents

The group-specific test reagents enable allocation to the serological O groups.

Monospecific test reagents

The serotype is identified using the monospecific test reagents

Control antigens for the Anti-Salmonella test reagents

The control antigens are used to check the agglutinability of the Anti-Salmonella test reagents and for quality control when carrying out the slide agglutination test.

Control antigens for the Anti-Shigella test reagents

The control antigens are used to check the agglutinability of the Anti-Shigella test reagents and for quality control when carrying out the slide agglutination test.

Test antigens and control sera

Test antigens are used to verify the presence of specific antibodies in patient sera. The corresponding control sera are used to verify the agglutinability of the test antigens and also act as a system control.

Notes when using the products

The products must be stored between 2 °C and 8 °C. Under these conditions, they can be used until the specified date. After the initial opening and dissolving in the stated quantity of distilled water, lyophilisates must be well sealed using the supplied screw pipettes and then stored between 2 °C and 8 °C. They are ready to use after rehydration. The shelf lives of the rehydrated products are specified in the relevant instructions for use. The products can only be used until the date stated on the label, however.

The products are preserved by adding sodium azide, thiomersal or other declared substances. To prevent bacterial contamination, the bottles should be sealed after use and stored again between 2 °C and 8 °C.

Certified Quality Management System in accordance with DIN EN ISO 9001 and DIN EN ISO 13485

All products are medical products. They meet the definitions and requirements of the Directive 98/79/EC (IVD Directive) and therefore carry the CE label.

Introduction

Guidelines for laboratory diagnostics

This brochure provides you with practical information for using the products as well as the necessary scientific background.

Cultivation

The samples must be cultivated on culture media appropriate for the material being tested. For some test materials, enrichment on selective or non-selective culture media may be required.

Biochemical identification

Biochemical identification of colonies with suspect morphology on cultivation

Polytropic differentiation medium, e.g. Kligler, or commercial identification systems

Before starting the serotyping, it is necessary to biochemically confirm the group to which the isolate belongs. For this purpose, alternative procedures (e.g. MALDI mass spectroscopy: MALDI-TOF) can also be used, presuming that the suitability of the procedure has been verified.

Test material and methodology

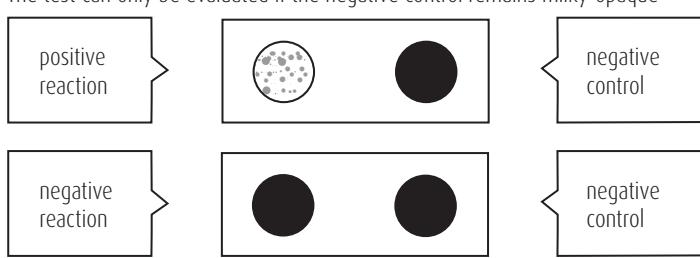
The test material is streaked on non-selective culture media such as Nutrient Agar or Blood Agar and incubated for 16–20 hours at 35...37 °C. A little bacterial mass is taken from a suspect colony and rubbed into a drop of test reagent (about 25 µL) on a slide to form a homogeneous, slightly milky suspension. The slide should be placed against a dark background. It is held and moved around in front of a light source against a black background and the results are read with the naked eye.

In exceptional cases, selective culture media may have a negative effect on the agglutinability of the bacteria. By removing the Nutrient or Blood Agar and the Kligler culture medium, this problem is avoided.

To exclude spontaneous agglutination, a negative control must be carried out using physiological saline instead of the test reagent.

Evaluation

The test can only be evaluated if the negative control remains milky-opaque



Positive: visible agglutination after the sample has been tilted back and forth less than 20 times. In a strongly positive reaction, agglutination (coarsely or finely flocculent) appears as soon as the bacterial mass is mixed in. In a weakly positive result, agglutination only appears after the slide has been tilted back and forth 10-20 times.

Negative: if the suspension remains milky-opaque or the reaction begins to occur only after the slide has been tilted back and forth more than 20 times, the result is negative.

Advantages of monoclonal antibodies

- Monoclonal antibodies are each made up of an absolutely uniform antibody population; the population is uniform in terms of the immunoglobulin class, specificity, avidity and heat stability. These very extensively investigated properties of the particular monoclonal antibody remain unchanged throughout all the manufacturing steps.
- They can be standardised and adjusted to a precisely reproducible antibody concentration whereby a consistent quality across different batches is guaranteed.
- The monoclonal antibodies from sifin diagnostics gmbh lead to rapid and significant agglutination for all the serovars that have the homologous antigen, regardless of other antigens or partial antigens that may be present.
- Monoclonal antibodies are free of additional antibodies.
- The production of monoclonal antibodies is independent of immunoserum donors. They are produced using biotechnology by harvesting cell culture supernatants containing antibodies.
- Antibody specificities that cannot be produced by polyclonal means e.g. O:3, O:13, H:1, H:e, H:l, H:n can also be isolated as monoclonal antibodies.

Salmonella Diagnostics

DIAGNOSTICS WITH PASSION



Agglutination for professionals

Salmonellosis is a classic food contamination. The serovar *S. Enteritidis* is spread primarily in eggs or food and preparations containing eggs that have not been adequately heated, particularly if these foods contain raw eggs, e.g. ice cream.

Salmonella are also often spread via raw meat or meat products that have not been heated or heated only inadequately (e.g. poultry, minced meat) (www.rki.de).

The genus *Salmonella* is a member of the *Enterobacteriaceae* family. All *Salmonella* are obligate pathogens. *S. Typhi* and *S. Paratyphi* (A, B, C) induce cyclic infectious disease. These typhoid *Salmonella* are rare in industrial countries and are generally imported infections. In contrast, non-typhoid *Salmonella* are one of the most common causes of bacterial gastroenteritis in humans. The infection is caused by ingesting the pathogen by mouth.

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Salmonella Diagnostics

Principles

Salmonella are ubiquitous Gram-negative, rod-shaped, oxidase-negative, facultative anaerobic, non-sporulating bacteria that usually form colonies with a diameter of 2 to 4 mm on solid culture media.

Biochemical tests enable differentiation of the two species *Salmonella enterica* and *Salmonella bongori* with *S. enterica* further divided into 6 subspecies:

- *Salmonella enterica* ssp. *enterica*
- *Salmonella enterica* ssp. *salamae*
- *Salmonella enterica* ssp. *arizonae*
- *Salmonella enterica* ssp. *diarizonae*
- *Salmonella enterica* ssp. *houtenae*
- *Salmonella enterica* ssp. *indica*

The internationally authoritative foundation used to classify *Salmonella* is the White-Kauffmann-Le Minor scheme. The WHO Collaborating Centre for Reference and Research on *Salmonella* at the Institut Pasteur in Paris is responsible for regularly updating the 'Antigenic formulae of the *Salmonella* serovars' which forms the basis of the allocation of the serovar names and antigen formulae to isolates of *Salmonella* species.

Salmonella laboratory diagnostics, typhoid and non-typhoid Salmonellae

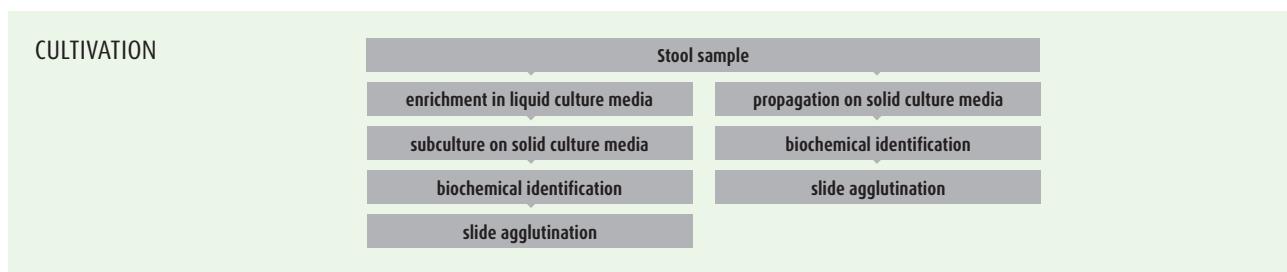
The following instructions apply only to direct pathogen detection tests.

Test material

- Specimens of faecal origin
stool, rectal swab
- Specimens of extraintestinal origin
blood, urine, liquor, punctates, swabs, lymph nodes, bone marrow
- Other specimens
vomit, food leftovers

Cultivation

Example for stool samples



Biochemical identification

Before starting the serotyping, it is necessary to biochemically confirm the group to which the isolate belongs. For this purpose, alternative procedures (e.g. MALDI mass spectroscopy: MALDI-TOF) can also be used, presuming that the suitability of the procedure has been verified.

Serotyping

The *Salmonella* genus is characterised by exceptionally high serological diversity. There are currently more than 2600 serovars known. Identifying the serovar (*Salmonella* with an individual combination of several antigens) is considered very important because this provides information about the diagnosis of the pathogen (e.g. *S. Typhi*, *S. Paratyphi*), the frequency and distribution of the serovars and the sources of infection and transmission routes.

The serotyping is used to identify the presence or absence of specific O antigens, H antigens and the Vi antigen in an isolate that has been confirmed as *Salmonella*. Generally, the O antigens are first identified followed by the H antigens. For biphasic strains, both H phase antigens must be identified. If only one phase can be identified, the swarming inhibition method must be used to induce the second phase. For optimum formation of the *Salmonella* H antigens, swarm agar is suitable (see phase induction).

If the Vi antigen is present, it may mask evidence of the presence of O antigens. To detect O antigens, it may therefore be necessary to heat an antigen suspension of the isolate for 60 minutes at 100 °C or 15 minutes at 120 °C. This leads to destruction of the capsular antigen.

The serovars are classified on the basis of the White-Kauffmann-Le Minor scheme.

Important antigens for serotyping

O antigens

The O antigens are localised in the cell wall of the bacteria and are a component of the lipopolysaccharide (LPS). The LPS is made up of the lipid A, the core polysaccharide and the O-specific chain that represents the O antigen. The O antigens are made up of repeating units of oligosaccharides (3 to 8 monosaccharides). They are usually heat stable. The individual O antigens differ in their sequences and the type of bonds between the individual monosaccharides.

Amongst the O antigens there are group-specific antigens that give the O group its name (e.g. O:2, O:4, O:9) and O antigens that may exist in addition to the group-specific antigen and that further characterise the corresponding serovar (e.g. O:5, O:27, O:20). The serotyping is always started by identifying the O antigens: the antigen characteristic for the group is first identified and then other O antigens follow if necessary.

H antigens

The *Salmonella* have, with few exceptions, peritrichous flagella and are thus motile. These flagellae are made up of a protein (flagellin) and are the H antigens. Due to their proteinaceous nature, they are heat labile. The specificity of the many H antigens is determined by the amino acid composition and sequence as well as the tertiary structure. Most *Salmonella* can form flagellar proteins with two different structures (biphasic strains) that are referred to as phase 1 H antigens and phase 2 H antigens. Both phases may be present in one culture or only one of the two may be more pronounced. In general, the H antigens develop best on swarm agar. The serotyping of a *Salmonella* serovar is only complete once both H antigens (applies to biphasic strains) have been identified. If, however, only one phase can be detected, the strain must be 'forced' to form the other phase. The methods used to achieve this are described in the chapter on using the H test reagents.

Vi antigen

The capsular antigen of the *Salmonella* species is the Vi antigen, which is only present in *S. Typhi*, *S. Paratyphi C* and very rarely in *S. Dublin*. The Vi antigen is a polysaccharide but it is heat labile due to the presence of acetyl groups.

The special feature of this antigen is that it can mask the O antigen because it is a capsular antigen. Only the destruction of the capsular antigen by boiling enables O agglutination of the corresponding strain. The H agglutination is not inhibited by the capsular antigen. It must be carried out on the native strain without boiling.

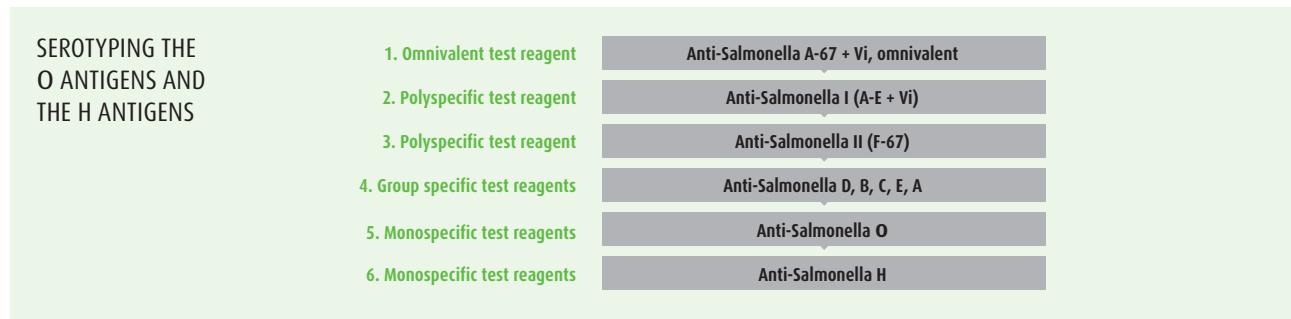
Test reagents for serotyping

The serotyping has been carried out for decades using a range of polyvalent, group-specific and monospecific test reagents. The antigen analysis using antisera with known antibodies is referred to as the Gruber test and is carried out qualitatively on a slide (slide agglutination test). These test reagents are still prepared around the world based on animal immunosera (pAb).

Since 1994 sifin diagnostics gmbh has produced a number of test reagents for serotyping *Salmonella* based on internally developed monoclonal antibodies (mAb). sifin diagnostics gmbh currently has more than 118 mAb for preparing Anti-Salmonella test reagents: 75 mAb Anti-Salmonella O for 66 products and 43 mAb Anti-Salmonella H for 28 products

Carrying out the serodiagnostics

Flowchart for the serotyping



1. The Anti-Salmonella A-67 + Vi test reagent is used as an exploratory examination of suspect colonies to detect the presence of bacteria of the *Salmonella* genus.
2. The Anti-Salmonella I test reagent is used to classify isolates that agglutinate with the omnivalent test reagent into groups A to E.
3. The Anti-Salmonella II test reagent is used to classify isolates that agglutinate with the omnivalent test reagent but not Anti-Salmonella I into groups O:11 (F) - 67.
4. The Anti-Salmonella D, B, C, E, A group-specific test reagents are used to identify the serogroup of *Salmonella* that agglutinates with the omnivalent test reagent and/or the polyspecific test reagent Anti-Salmonella I. They exclusively agglutinate *Salmonella* of the declared serogroup.
5. The Anti-Salmonella monospecific test reagents are used either to identify the group-specific O antigens and thus to allocate an isolate to the appropriate group in the White-Kauffmann-Le Minor scheme or to detect additional O antigens if they are required for identifying or verifying the serovar.
6. For serotyping *Salmonella*, it is necessary to identify the H antigen(s) as well as the O antigens. For biphasic strains the H antigens of both phases must be identified. The Anti-Salmonella H test reagents are used to identify or verify the H antigens or H antigen complex of *Salmonella* strains according to the White-Kauffmann-Le Minor scheme with the help of the slide agglutination test. It enables identification of the serovar.

Test reagents for screening

Test material

For the slide agglutination test using polyvalent, group-specific and monospecific test reagents, start with a subculture of the suspect colony or colonies, preferably on non-selective or Kligler Agar, alternatively for screening also on selectivity level 1 and 2 agar.

Before starting the serotyping, it is necessary to confirm biochemically that the isolate belongs to the *Salmonella* genus. For this purpose, alternative procedures (e.g. MALDI mass spectroscopy: MALDI-TOF) can also be used, presuming that the suitability of the procedure has been verified.

Anti-Salmonella A - 67 + Vi, omnivalent

The test reagent is used for an exploratory examination of suspect colonies to detect the presence of bacteria in the *Salmonella* genus. As a screening reagent, it must rapidly and significantly agglutinate all *Salmonella*, that is, a negative result must indicate the absence of *Salmonella* with a high likelihood. Due to this high requirement for sensitivity, limitations on the specificity are unavoidable. Non-specific positive results are possible due to antigen relationships or identities.

Many cross-reactions based on an antigen relationship may be excluded by using monoclonal antibodies. Antigen identities, however, are also detected if monoclonal antibodies are used. This includes, e.g. certain serovars of *E. coli* and *Citrobacter* spp., some *Proteus* spp. and occasionally *Hafnia alvei* strains. The *Salmonella* antigens O:30, O:35, O:43 and O:50 are known to cross-react with *E. coli* O antigens and the *Salmonella* antigens O:4, O:7 and O:8 cross-react with *Citrobacter* O antigens. *E. coli* strains can generally be differentiated from *Salmonella* due to the lactose fermentation and the lack of formation of H₂S. The exceptions are the lactose-negative *E. coli* strains.

Lactose-negative *Citrobacter* strains that form H₂S often cannot be differentiated from *Salmonella* by means of their colony morphology. They can also be agglutinated by the omnivalent test reagent as a result of an antigen relationship or identity. Biochemical methods such as the PYRase, lysine decarboxylase or KDN tests must be used for differentiation. Cross-reactions with all serovars of *Shigella flexneri* and with *Shigella sonnei* (S and F form) are excluded.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid	Lyo.	Packing
TR 1101	Anti-Salmonella A - 67 + Vi, omnivalent	A mixture of monoclonal antibodies in the form of cell culture supernatants. Contains all antibodies against the group-specific <i>Salmonella</i> O antigens. Detects all <i>Salmonella</i> in groups A to 67 and the Vi antigen. Used for initial testing of suspicious colonies to detect the presence of bacteria of the <i>Salmonella</i> genus.	liquid		1 ml
TR 1105			liquid		5 ml

Anti-Salmonella I (A - E + Vi)

The test reagent is used to classify isolates that agglutinate with the omnivalent test reagent into groups A to E. For isolates from human test material, it can be used instead of the omnivalent test reagent as an orienting examination of suspect colonies for the presence of bacteria in the *Salmonella* genus because about 98 % of the *Salmonella* serovars isolated from humans can be allocated to groups A to E. Due to antigen identities or relationships, cross-reactions with Anti-Salmonella I, e.g. with *Citrobacter* spp., *Proteus* spp., *E. coli* or *Hafnia alvei*, are possible.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid	Lyo.	Packing
TR 1111	Anti-Salmonella I (A - E + Vi)	A mixture of monoclonal antibodies in the form of cell culture supernatants. Agglutinates salmonellae of the groups O:2 (A) to O:1,3,19 (E ₄). <i>Salmonella</i> from groups O:11 (F) to O:67 are not agglutinated.	liquid		1 ml
TR 1115			liquid		5 ml

Anti-Salmonella II (F - 67)

The Anti-Salmonella II test reagent is used to classify isolates that agglutinate with the omnivalent test reagent but not Anti-Salmonella I into groups O:11 (F) - 67.

Due to antigen identities or relationships, cross-reactions with Anti-Salmonella II, e.g. with *Citrobacter* spp., *Proteus* spp., *E. coli* or *Hafnia alvei*, are possible.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid Lyo.	Packing
TR 1121	Anti-Salmonella II (F - 67)	A mixture of monoclonal antibodies in the form of cell culture supernatants. Agglutinates salmonellae of the groups O:11 (F) to O:67. Does not contain any antibodies against Salmonella from groups O:2 (A) to O:1,3,19 (E ₄). The test reagent is ready-to-use after dissolving in 1 ml or 5 ml distilled water.	lyophilised	1 ml
TR 1125			lyophilised	5 ml

Anti-Salmonella Poly-H Phase 1 & 2

The test reagent is used for serological evidence of the presence of the H antigens of *Salmonella* strains.

Cross-reactions with other genera in the *Enterobacteriaceae* family could not be demonstrated with this test reagent.

Positive serological results alone are not evidence of the presence of *Salmonella*. Allocation to the *Salmonella* genus by biochemical means is therefore necessary. A negative result does not exclude the presence of *Salmonella* with absolute certainty.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid Lyo.	Packing
TR 1141	Anti-Salmonella Poly-H Phase 1 & 2	Contains antibodies covering H-antigens or complexes: a, b, c, d, E, G, i, k, L, r, y, z, Z ₄ , Z ₆ , Z ₁₀ , Z ₂₉ , Z ₃₅ , Z ₃₈ , Z ₄₁ , H:1. Antibodies that detect complex antigens, such as Anti-H:E, -H:L or -H:1, detect all combinations of the antigens H:e, H:l or H:1.	liquid	1 ml
TR 1145			liquid	5 ml

Antigen detection for A - 67 + Vi, A - E + Vi, F - 67

Test Reagent	Agglutination of a <i>Salmonella</i> isolate	
Anti-Salmonella A - 67 + Vi, omnivalent	+	+
Anti-Salmonella I (A - E + Vi)	+	-
Anti-Salmonella II (F - 67)	Examination not required.	+
Result	Group A-E	Group F-67
Frequency	common	rare

Coverage of O-Group Pools

O-Group Pool test reagents (alternative to Anti-Salmonella I or Anti-Salmonella II)

O group pool test reagents can be used as an alternative to Anti-Salmonella I or Anti-Salmonella II for initial allocation of suspect *Salmonella* isolates from test material of human or other origin (e.g. food or environmental samples) to seven different O group pools. If the isolated strain has a *Salmonella* antigen corresponding to the detection range of the O group pool test reagent, this is bound to the specific antibody when they are mixed together. As a result of the antigen-antibody reaction, significant visible agglutination of the strain is observed.

Testing with the O group pool test reagents Anti-Salmonella OMA and Anti-Salmonella OMB, which detect about 98 % of the *Salmonella*, is then carried out. If a strain does not agglutinate with these two test reagents, it should be tested with the Anti-Salmonella Vi (REF TR 1316). If the reaction to this test is negative, the strain should be agglutinated with the O group pool test reagents Anti-Salmonella OMC, Anti-Salmonella OMD, Anti-Salmonella OME, Anti-Salmonella OMF and Anti-Salmonella OMG. Further serological differentiation must be carried out with the White-Kauffmann-Le Minor scheme. Due to antigen identities or relationships, cross-reactions with O-Group Pool test reagents, e.g. with *Citrobacter* spp., *Proteus* spp., *E. coli* or *Hafnia alvei*, are possible.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	O-Groups	Liquid	Lyo.	Packing
TR 1151	Anti-Salmonella OMA	(A, B, D, E, L)	liquid		1 ml
TR 1152			liquid		3 ml
TR 1161	Anti-Salmonella OMB	(C, F, G, H)	liquid		1 ml
TR 1162			liquid		3 ml
TR 1170	Anti-Salmonella OMC	(I, J, K, M, N, O, P)	liquid		1 ml
TR 1171	Anti-Salmonella OMD	(Q, R, S, T, U, V, W)	liquid		1 ml
TR 1172	Anti-Salmonella OME	(X, Y, Z, 51, 52, 53)	liquid		1 ml
TR 1173	Anti-Salmonella OMF	(54, 55, 56, 57, 58, 59)	liquid		1 ml
TR 1174	Anti-Salmonella OMG	(60, 61, 62, 63, 65, 66, 67)	liquid		1 ml
TR 1316	Anti-Salmonella Vi		liquid		1 ml

Coverage of H-Phase Pools

H-Phase Pool test reagents

The test, using polyclonal H-Phase Pool test reagents Anti-Salmonella HMA, Anti-Salmonella HMB or Anti-Salmonella HMC, enables the identification of the most common H-antigens or H-antigen complexes of *Salmonella* strains. Furthermore the presence of the antigen complex H:1 should be tested by Anti-Salmonella H:1 (REF TR 1437, TR 5437).

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	H-Antigens	Liquid	Lyo.	Packing
TR 1181	Anti-Salmonella HMA	(a, b, c, d, i, z ₁₀ , z ₂₉)	liquid		1 ml
TR 1182			liquid		3 ml
TR 1183	Anti-Salmonella HMB	(E, G)	liquid		1 ml
TR 1184			liquid		3 ml
TR 1185	Anti-Salmonella HMC	(k, y, z, L, Z ₄ , r)	liquid		1 ml
TR 1186			liquid		3 ml

Determination of the O group using group-specific test reagents

Group specific test reagents Anti-Salmonella

Mixtures of monoclonal antibodies of the corresponding specificities in the form of cell culture supernatants. For identification of the serogroup of *Salmonella* spp. that agglutinate with the omnivalent test reagent and/or the polyspecific test reagent Anti-Salmonella I or alternatively with the O group pool test reagents. They exclusively agglutinate *Salmonella* of the declared serogroup.

According to the frequency of the reported serovars, the group-specific test reagents should be used in the following order:

1. Anti-Salmonella Group D
2. Anti-Salmonella Group B
3. Anti-Salmonella Group C
4. Anti-Salmonella Group E
5. Anti-Salmonella O:2 corresponds to Anti-Salmonella Group A

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid		Lyo.	Packing
TR 1201	Anti-Salmonella Group B	Records all antigen combinations of group O:4 (B). Salmonella in group B are verified using Anti-Salmonella Group B (O:4,5,27). All possible antigen combinations for this O group are detected. A cross-reaction with strains in group D ₃ (O:9,12,46,27) via O:27 is theoretically possible. Strains from this group are very rare, however. Anti-Salmonella O:4 can be used instead of Anti-Salmonella Group B. Cross-reactions with other Salmonella are excluded.	liquid		1 ml	
TR 5201			liquid		5 ml	
TR 1202	Anti-Salmonella Group C	Records all strains of group O:7 (C) and O:8 (C ₂ -C ₃). Salmonella in group C are verified using Anti-Salmonella Group C (O:7,8). The mixture of the two monoclonal antibodies Anti-Salmonella O:7 and Anti-Salmonella O:8 enables detection of all strains in group C. Unlike polyclonal test reagents, cross-reactions with strains from groups O:6,14 (H) and O:18 (K) via the O:6 antigen are excluded.	liquid		1 ml	
TR 1203	Anti-Salmonella Group D	Records all strains of group O:9 (D ₁), O:9,46 (D ₂) and O:9,46,27 (D ₃). Salmonella in group D are verified using Anti-Salmonella Group D (O:9,Vi). The test reagent detects all possible antigen combinations for this group. Because the presence of the Vi antigen can inhibit the ability of <i>S. Typhi</i> to agglutinate due to anti-O:9, Anti-Salmonella Group D contains anti-Vi as well as anti-O:9. The presence of these antibodies means a reaction with <i>S. Paratyphi</i> C (O:6,7,Vi; group C) is possible. Serotypes in group D ₂ can also contain the factors O:3 and O:10, the latter very weakly. Phage conversion due to ε ₁₅ and ε ₃₄ is possible as in group E. These serovars then react with the homologous antibodies of group E. Cross-reactions with Salmonella from other groups are excluded.	liquid		1 ml	
TR 5203			liquid		5 ml	
TR 1204	Anti-Salmonella Group E (O:3 complex)	Records all strains of group O:3,10; O:3,15; O:3,15,34 (E ₁) and O:1,3,19 (E ₂). Group O:3,10 also includes the previous groups O:3,15 (E ₁) and O:3,15,34 (E ₂). Salmonella in group E are verified with Anti-Salmonella Group E. The test reagent can also react with serovars from group D ₂ (O:9,46) because these can have low levels of the antigen O:3 (and O:10) and for the same reason can also occur after lysogenisation of the antigen O:15 or the antigens O:15 and O:34 (see Group D).	liquid		1 ml	

Determination of the O antigens using monospecific test reagents

The Anti-Salmonella monospecific test reagents are used either to identify the group-specific O antigens and thus to allocate an isolate to the appropriate group in the White-Kauffmann-Le Minor scheme or to detect additional O antigens if they are required for identifying or verifying the serovar.

The test reagents are monoclonal antibodies, test sera or a mixture of monoclonal antibodies and test serum. Monoclonal antibodies are produced from cell culture supernatants of hybridoma cell lines that secrete antibodies against the corresponding *Salmonella* antigens. The test sera are sera from immunised rabbits from which non-specific agglutinins are removed by absorption.

The test reagents for rare specificities are lyophilised and are ready to use after dissolving in 1 ml distilled water.

The possible antigen combinations in the O groups, the O antigens to be identified by serotyping and the required test reagents are indicated, as well as the frequency expected for the antigen combination in isolates from the corresponding group.

Group O:2 (A)

Possible antigen combinations: 1,2,12 and 2,12 (antigen O:1 is induced by phage conversion and is therefore underlined)

The group-specific antigen O:2 must be identified. It is not necessary to identify antigen O:12 and where applicable antigen O:1.

Anti-Salmonella O:2 detects all strains in group A.

Group O:4 (B)

Possible antigen combinations: O:4,12; O:1,4,12; O:4,5,12; O:1,4,5,12; O:4,12,27; O:1,4,12,27.

Antigens O:4, O:5 and O:27 must be identified; it is not necessary to identify antigen O:12 and where applicable antigen O:1.

Anti-Salmonella O:4 detects all strains in group B regardless of the antigen combination.

Anti-Salmonella O:5 detects all strains in group B, provided they have antigen O:5.

Anti-Salmonella O:27 detects all strains in group B, provided they have antigen O:27.

Antigen detection for O:4, O:5, O:27

Test Reagent	Agglutination of a <i>Salmonella</i> isolate		
Anti-Salmonella O:4	+	+	+
Anti-Salmonella O:5	+	-	-
Anti-Salmonella O:27	Examination not required because the antigens O:5 and O:27 do not occur together.	+	-
Result	O:4,5,12	O:4,12,27	O:4,12 This result can also occur in strains that generally have antigen O:5, e.g. <i>S. Typhimurium</i> O:5- (early variant Copenhagen).
Frequency in the O group	common	rare	rare

Group O:7 (C₁) and Group O:8 (C₂-C₃)

Possible antigen combinations: O:6,7; O:6,7,Vi; O:6,7,14; O: 6,8; O:8; O:8,20.
Antigens O:7, O:8 as well as O:20 and O:6 in group C₂-C₃ must be identified.

Anti-Salmonella O:7 detects all strains in group C₁.

The O:6 antigen from group C₁ is the partial antigen O:6₂; it does not have to be identified.

Anti-Salmonella O:8 detects all strains in group C₂-C₃.

Anti-Salmonella O:6₁ is used to analyse serovars from groups C₂-C₃ for the absence or presence of the antigen O:6 (strains with antigen O:6,8).
The O:6 antigen from group C₂-C₃ is the partial antigen O:6₁.

Note: Does not include the antigen O:6₂ from the group O:7 (C₁). Does not agglutinate antigen O:6,14 (H).

Anti-Salmonella O:20 is used to differentiate the strains in the group C₂-C₃ by detecting the antigen O:20 (strains with antigen O:8,20).
If the result with Anti-Salmonella O:6₁ and Anti-Salmonella O:20 is negative, the strain only contains O:8.

Antigen detection for O:7, O:8, O:6₁, O:20

Test Reagent	Agglutination of a <i>Salmonella</i> isolate			
Anti-Salmonella O:7	+	-	-	-
Anti-Salmonella O:8	Examination not required.	+	+	+
Anti-Salmonella O:6 ₁	Examination not required.	+	-	-
Anti-Salmonella O:20	Examination not required, because the antigens O:6 and O:20 do not occur together.		+	-
Result	O:6,7	O:6,8	O:8,20	O:8
Frequency in the O group	common	common	rare	very rare

Group O:9 (D_1), Group O:9,46 (D_2) and Group O:9,46,27 (D_3)

Possible antigen combinations: O:9,12; O:9,12,Vi; O:1,9,12; O:9,46, (extremely rare: O:1,9,12,46,27).

The antigens O:9, O:46, Vi, (O:27) must be identified. For isolates that showed a positive result for the Anti-Salmonella Group D, the agglutination may be caused by anti-O:9 and/or anti-Vi.

Anti-Salmonella O:9 detects all strains in group D regardless of the antigen combination. The agglutination can be inhibited by a very highly developed Vi antigen. With a negative result with Anti-Salmonella O:9 and a positive result with Anti-Salmonella Vi, the indicated procedure must be used.

Differentiation within group D is carried out using the following test reagents:

Anti-Salmonella O:46 detects all strains in group D_2 (O:9,46) and does not react with the strains in group D_1 (O:9,12). Strains in group D_3 are not agglutinated or only weakly agglutinated. Serovars in group D_3 are characterised by a positive result with Anti-Salmonella O:9 and Anti-Salmonella O:27.

Antigen detection for O:9, Vi, O:46, O:27

Test Reagent	Agglutination of a <i>Salmonella</i> isolate				
Anti-Salmonella O:9	+	+	-	+	+
Anti-Salmonella Vi	-	+	+	-	-
Anti-Salmonella O:46	-	Examination not required.	Examination not required.	+	+/-
Anti-Salmonella O:27	-	Examination not required.	Examination not required.	-	+
Result	O:9,12	S. Typhi S. Dublin	S. Typhi, S. Paratyphi C or S. Dublin *)	O:9,46	O:9,12,46,27
Frequency in the O group	very common	rare	rare	very rare	extremely rare

*) **S. Typhi, S. Paratyphi C or S. Dublin:** Inhibition of the O agglutination due to a highly developed Vi antigen. From the pure culture of the isolate, a suspension is prepared in isotonic sodium chloride solution that is heated for 60 min at 100 °C or 15 min at 120 °C.

This destroys the Vi antigen. If the reaction of the sediment with Anti-Salmonella O:9 after centrifugation is positive, the serovar is S. Typhi or S. Dublin. With a negative reaction with Anti-Salmonella O:9, the serovar must then be tested with Anti-Salmonella O:7.

With a positive result with O:7, the serovar can only be S. Paratyphi C.

Group O:3,10 (E₁) and Group O:1,3,19 (E₄)

Possible antigen combinations: O:3,10; O:3,15, O:3,15, 34, O:1,3,19 (extremely rare: O:1,3,10,19; O:1,3,15,19). The antigens O:10, O:15, O:19 and O:34 must be identified.

Anti-Salmonella O:10 detects all strains in group E₁ (O:3,10) that have not been converted by the phages ε₁₅ or ε₁₅ and ε₃₄. The test reagent does not react with the strains in group E₁ after phage conversion (previously groups E₂ and E₃) because the antigen O:10 can no longer be detected after lysogenisation. Strains from group E₄ are not agglutinated unless they have the antigen O:10 (e.g. *S. Chittagong*, O:1,3,10,19).

Anti-Salmonella O:15 detects all strains in group E₁ after conversion by the phages ε₁₅ or ε₁₅ and ε₃₄ (previously groups E₂ and E₃). The test reagent does not react with the strains in group E₁ (O:3,10). Strains from group E₄ are not agglutinated unless they have the antigen O:15 (e.g. *S. Dessau*, O:1,3,15,19).

Anti-Salmonella O:19 detects all strains in group E₄. The test reagent does not react with the strains in group E₁ (O:3,10; O:3,15, O:3,15, 34).

Anti-Salmonella O:34 detects all strains in group E₁ after conversion by the phages ε₁₅ and ε₃₄ (previously group E₃). It does not react with the strains O:3,10 or O:3,15 and strains in group E₄ but does cross-react with the Salmonella antigens O:12_z, O:28 and O:55 and can therefore only be used to differentiate serovars within group E₁. Serovars in group D₂ (O:9,46) can have the antigens O:3 and O:10, as well as O:15 and O:34 due to phage conversion by ε₁₅ and ε₃₄, and then react with the homologous antibodies from group E.

Antigen detection for O:10, O:15, O:34, O:19

Test Reagent	Agglutination of a <i>Salmonella</i> isolate					
Anti-Salmonella O:10	+	-	-	-	+	-
Anti-Salmonella O:15	Examination not required.	+	+	-	Examination not required.	+
Anti-Salmonella O:34	Examination not required.	-	+	Examination not required.	Examination not required.	-
Anti-Salmonella O:19	-	-	Examination not required.	+	+	+
Result	O:3,10	O:3,15	O:3,15,34	O:1,3,19	O:1,3,10,19	O:1,3,15,19
Frequency in the O group	common	rare	rare	very rare	extremely rare	extremely rare

Monospecific test reagents Anti-Salmonella O

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid Lyo.	Packing
TR 1301	Anti-Salmonella O:2	Detects all strains in group A. Possible antigen combinations: 1,2,12 and 2,12 (antigen O:1 is induced by phage conversion and is therefore underlined). The group-specific antigen O:2 must be identified. It is not necessary to identify antigen O:12 and where applicable antigen O:1.	liquid	1 ml
TR 1302	Anti-Salmonella O:4	Detects all strains in group B regardless of the antigen combination. Possible antigen combinations: O:4,12; O: <u>1</u> ,4,12; O:4,5,12; O:1,4,5,12; O:4,12, <u>27</u> ; O: <u>1</u> ,4,12, <u>27</u> . The antigens O:4, O:5 and O:27 or antigens O:1 and O:12 must be determined.	liquid	1 ml
TR 5302			liquid	5 ml
TR 1303	Anti-Salmonella O:5	Detects all strains in group B, provided they have antigen O:5.	liquid	1 ml
TR 5303			liquid	5 ml
TR 1304	Anti-Salmonella O:6	Group C ₂ -C ₃ Used to analyse serovars from group C ₂ -C ₃ for the absence or presence of the antigen O:6 (strains with antigen O:6,8). The O:6 antigen from group C ₂ -C ₃ is the partial antigen O:6.	lyophilised	1 ml
TR 1305	Anti-Salmonella O:7	Detects all strains in group C ₁ . The O:6 antigen from group C ₁ is the partial antigen O:6; ⁷ it does not have to be identified.	liquid	1 ml
TR 1306	Anti-Salmonella O:8	Detects all strains in group C ₂ -C ₃ .	liquid	1 ml
TR 1307	Anti-Salmonella O:9	Detects all strains in group D regardless of the antigen combination. The agglutination can be inhibited by a very highly developed Vi antigen.	liquid	1 ml
TR 5307			liquid	5 ml
TR 1308	Anti-Salmonella O:10	Group E ₁ and Group E ₄ Detects all strains in group E ₁ (O:3,10) that have not been converted by the phages ε ₁₅ or ε ₁₅ and ε ₃₄ . Does not react with the strains in group E ₁ after phage conversion (previously groups E ₂ and E ₃) because the antigen O:10 can no longer be detected after lysogenisation. Strains from group E ₄ are not agglutinated unless they have the antigen O:10 (e.g. S. Chittagong, O:1,3,10,19).	liquid	1 ml
TR 1323	Anti-Salmonella O:11	Group F	lyophilised	1 ml
TR 1325	Anti-Salmonella O:13	Group G	lyophilised	1 ml
TR 1309	Anti-Salmonella O:14	Group H Detects only the O:14 antigen in the H group but not that of the C ₁ group.	lyophilised	1 ml
TR 1310	Anti-Salmonella O:15	Group E ₁ Detects all strains in group E ₁ after conversion by the phages ε ₁₅ or ε ₁₅ and ε ₃₄ (previously groups E ₂ and E ₃). Does not react with the strains in group E ₁ (O:3,10). Strains from group E ₄ are not agglutinated unless they have the antigen O:15 (e.g. S. Dessau, O:1,3,15,19).	liquid	1 ml

Art. No.	Product	Description	Liquid Lyo.	Packing
TR 1328	Anti-Salmonella O:16	Group I	lyophilised	1 ml
TR 1329	Anti-Salmonella O:17	Group J	lyophilised	1 ml
TS 1330	Anti-Salmonella O:18	Group K	lyophilised	1 ml
TR 1311	Anti-Salmonella O:19	Group E ₄ Detects all strains in group E ₄ . Does not react with the strains in group E ₁ (O:3,10; O:3,15, O:3,15,34).	liquid	1 ml
TR 1312	Anti-Salmonella O:20	Used to differentiate the strains in groups C ₂ -C ₃ by detecting the antigen O:20 (strains with antigen O:8,20). If the result with Anti-Salmonella O:6 ₁ and Anti-Salmonella O:20 is negative, the strain only contains O:8.	liquid	1 ml
TR 1331	Anti-Salmonella O:21	Group L	lyophilised	1 ml
TS 1332	Anti-Salmonella O:22	Group G	lyophilised	1 ml
TR 1335	Anti-Salmonella O:25	Group H	lyophilised	1 ml
TR 1313	Anti-Salmonella O:27	Group B and Group D ₃ Detects all strains in group B and D ₃ , provided they have antigen O:27.	liquid	1 ml
TR 1336	Anti-Salmonella O:28	Group M	lyophilised	1 ml
TR 1339	Anti-Salmonella O:30	Group N	lyophilised	1 ml
TR 1314	Anti-Salmonella O:34	Group E ₃ Detects all strains in group E ₁ after conversion by the phages ε ₁₅ and ε ₃₄ (previously group E ₃). Does not react with the strains O:3,10 or O:3,15 and strains in group E ₄ but does cross-react with the Salmonella antigens O:12 ₂ , O:28 and O:55 and can therefore only be used to differentiate serovars within group E ₁ . Serovars in group D ₂ (O:9,46) can have the antigens O:3 and O:10, as well as O:15 and O:34 due to phage conversion by ε ₁₅ and ε ₃₄ , and then react with the homologous antibodies from group E.	liquid	1 ml
TR 1341	Anti-Salmonella O:35	Group O	lyophilised	1 ml
TR 1344	Anti-Salmonella O:38	Group P	lyophilised	1 ml
TR 1345	Anti-Salmonella O:39	Group Q	lyophilised	1 ml
TR 1346	Anti-Salmonella O:40	Group R	lyophilised	1 ml
TR 1347	Anti-Salmonella O:41	Group S	lyophilised	1 ml
TR 1348	Anti-Salmonella O:42	Group T	lyophilised	1 ml
TR 1349	Anti-Salmonella O:43	Group U	lyophilised	1 ml
TR 1350	Anti-Salmonella O:44	Group V	lyophilised	1 ml
TR 1351	Anti-Salmonella O:45	Group W	lyophilised	1 ml

Art. No.	Product	Description	Liquid Lyo.	Packing
TR 1315	Anti-Salmonella O:46	Group D ₂ Anti-Salmonella O:46 detects all strains in group D ₂ (O:9,46) and does not react with the strains in group D ₁ (O:9,12). Strains in group D ₃ are not agglutinated or only weakly agglutinated.	liquid	1 ml
TR 1353	Anti-Salmonella O:47	Group X	lyophilised	1 ml
TR 1354	Anti-Salmonella O:48	Group Y	lyophilised	1 ml
TR 1355	Anti-Salmonella O:50	Group Z	lyophilised	1 ml
TR 1356	Anti-Salmonella O:51		lyophilised	1 ml
TR 1357	Anti-Salmonella O:52		lyophilised	1 ml
TR 1358	Anti-Salmonella O:53		lyophilised	1 ml
TR 1359	Anti-Salmonella O:54		lyophilised	1 ml
TR 1360	Anti-Salmonella O:55	Reacts with some strains of the group O:59.	lyophilised	1 ml
TR 1361	Anti-Salmonella O:56		lyophilised	1 ml
TR 1362	Anti-Salmonella O:57		lyophilised	1 ml
TR 1363	Anti-Salmonella O:58		lyophilised	1 ml
TR 1364	Anti-Salmonella O:59		lyophilised	1 ml
TR 1365	Anti-Salmonella O:60		lyophilised	1 ml
TR 1364	Anti-Salmonella O:59		lyophilised	1 ml
TR 1365	Anti-Salmonella O:60		lyophilised	1 ml
TR 1366	Anti-Salmonella O:61		lyophilised	1 ml
TR 1367	Anti-Salmonella O:62		lyophilised	1 ml
TR 1368	Anti-Salmonella O:63		lyophilised	1 ml
TR 1369	Anti-Salmonella O:65		lyophilised	1 ml
TR 1370	Anti-Salmonella O:66		lyophilised	1 ml
TR 1371	Anti-Salmonella O:67		lyophilised	1 ml

Monospecific test reagent Anti-Salmonella Vi

The test reagent is used to identify the Vi antigen according to the White-Kauffmann-Le Minor scheme. It does not contain any additional antibodies.
 Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Liquid Lyo.	Packing
TR 1316	Anti-Salmonella Vi	liquid	1 ml

Determination of the H antigens using monospecific test reagents

The test reagents are monoclonal antibodies, test sera or a mixture of monoclonal antibodies and test serum. Monoclonal antibodies are produced from cell culture supernatants of hybridoma cell lines that secrete antibodies against the corresponding *Salmonella* H antigens. The test sera are sera from immunised rabbits from which non-specific agglutinins are removed by absorption.

For serotyping *Salmonella*, it is necessary to identify the H antigen(s) as well as the O antigens. For biphasic strains the H antigens of both phases must be identified. The Anti-*Salmonella* H test reagents are used to identify or verify the H antigens or H antigen complex of *Salmonella* strains according to the White-Kauffmann-Le Minor scheme with the help of the slide agglutination test. It enables the identification of the serovar.

Anti-*Salmonella* H:E, Anti-*Salmonella* H:L and Anti-*Salmonella* H:1 detect all possible combinations of the antigen H:e (e,h; e,n,x; e,n,z₁₅; e,n,x,z₁₅), the antigen H:l (l,v; l,w; l,z₁₃; l,z₂₈; l,z₁₃,z₂₈) or the antigen H:1 (1,2; 1,5; 1,6; 1,7).

Anti-*Salmonella* H:g detects all possible combinations of the G complex provided they contain the antigen H:g (z.B. f,g; f,g,s; f,g,t; g,m; g,m,s; g,p; g,q; g,s,t; g,t; g,z₅). To verify all serovars that contain antigens in the G complex, that is, including the antigen H:m,t, Anti-*Salmonella* H:g,m must be used.

The correspondingly labelled products Anti-*Salmonella* H can also be used with biphasic strains for induction of the unverifiable H phase (Sven Gard swarming inhibition method).

Anti-*Salmonella* H:E, H:g, H:l and H:1 inhibit all possible antigen combinations of the antigens H:e, H:g, H:l and H:1. The lyophilised test reagents are ready to use after dissolving in 1 ml or 5 ml distilled water according to the declaration.

To verify the H antigens in the slide agglutination test, cultures on slant agar (e.g. Kligler culture medium) are suitable, ensuring the microbial material is collected from the lower, moist area of the slant agar. If verification of the H antigen is not successful, the strain must be inoculated on swarm agar for better characterisation of the flagellar antigens. We recommend TN 1702 (sifin) for the swarm agar.

Sequence of testing using the Anti-*Salmonella* H test reagents

By identifying the O antigens the group of the isolate is determined. The sequence for the testing of the H antigens is determined by the epidemiologically more common serovars.

Example: For an isolate from group O:4 (B) and a positive reaction with Anti-*Salmonella* O:5, the presence of *S. Typhimurium* is most likely. Consequently, testing is first done with Anti-*Salmonella* H:i and Anti-*Salmonella* H:1. If only one of the two antigens can be identified, phase induction must be carried out (see below).

With a negative result, Anti-*Salmonella* H:g (or Anti-*Salmonella* H:g,m) corresponding to the common serovars *S. Derby* (4,12:f,g:[1,2]) or *S. Agona* (4,12:f,g,s:[1,2]) must be used for testing.

With a negative result, other Anti-*Salmonella* H products must be used for analysis according to the frequency of the serovars.

It must be noted that *S. Typhimurium* also commonly occurs as monophasic variants (1,4,[5],12:i:-).

Phase induction

For biphasic strains that are only present in one H phase, the Sven Gard swarming inhibition method must be carried out to induce the 2nd phase. The Anti-Salmonella H test reagents suitable for phase induction are indicated in the table below.

Classical Sven Gard method

Mix 0.1 ml Anti-Salmonella H test reagent with 10 ml liquefied swarm agar (cooled to 40...45 °C) in a 6 cm diameter petri dish. After the agar has solidified, sprinkle the plate with approx. 100 µl distilled water and apply the strain at a single point in the centre of the dish. Incubate the dish with the agar layer face down overnight at 35 to 37 °C. For the slide agglutination test, collect material from the edge of the dish. If the phase induction is not successful, the inhibition procedure must be repeated.

Simplified modified procedure

We recommend the following simplified method: Prepare a dish (6 cm diameter) with 10 ml solidified swarm agar, add 0.1 ml Anti-Salmonella H drop by drop and spread across the surface with a sterile glass spatula. Then inoculate the centre of the dish and incubate as described above. After 16 to 20 hours, the strain that swarms can be used to identify the second, uninhibited H phase.

The simplified method usually enables the second phase to be identified at the first attempt. It also has the advantage of permitting swarm agar plates to be prepared and stored in advance and to be used as required for improving the expression of the H antigens or for the phase induction. The Anti-H products listed above as suitable for phase induction have been tested in this modified procedure and deliver results that are at least as good as in the classic method and in some cases, significantly better.

Special features

The test reagents against the complex antigens Anti-H E, Anti-H:g, Anti-H:L and Anti-H:1 are suitable for phase induction with strains possessing all possible antigen combinations in their respective complex. Thus Anti-Salmonella H:1 can be used to inhibit H:1,2, H:1,5, H:1,6 and H:1,7 with the same success as the polyclonal test reagent Anti-Salmonella H:1,2. The same applies for Anti-Salmonella H:E instead of Anti-H:e,h or Anti-Salmonella H:e,n,x, Anti-Salmonella H:L instead of Anti-Salmonella H:l,v etc.

Monospecific test reagents Anti-Salmonella H

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Phase induction	Liquid Lyo.	Packing
TR 1401	Anti-Salmonella H:a	mAb, H:a	x	liquid	1 ml
TR 1402	Anti-Salmonella H:b	mAb, H:b	x	liquid	1 ml
TR 1403	Anti-Salmonella H:c	mAb, H:c	x	liquid	1 ml
TR 1404	Anti-Salmonella H:d	mAb, H:d	x	liquid	1 ml
TR 1405	Anti-Salmonella H:E	mAb, H:e,h; H:e,n,x; H:e,n,Z ₁₅ ;	x	liquid	1 ml
TR 5405		H:e,n,x,Z ₁₅	x	liquid	5 ml
TR 1407	Anti-Salmonella H:f	mAb, H:f,g; H:f,g,s; H:f,g,t		lyophilised	1 ml
TR 1406	Anti-Salmonella H:g	mAb, all antigen combinations of the H:G complex except H:m,t: e.g. H:f,g; H:f,g,s; H:f,g,t; H:g,m; H:g,m,s; H:g,p; H:g,p,u; H:g,q; H:g,s,t; H:g,t; H:g,Z ₁₅ Since our Product H:g however does not cover m,t strains, we have chosen to write the name of the product (for which we initially used capital letters) using small letter g.	x x	liquid liquid	1 ml 5 ml
TR 5406					

Art. No.	Product	Description	Phase induction	Liquid Lyo.	Packing
TR 1408	Anti-Salmonella H:g,m	mAb, all antigen combinations of H:G complexes, incl. H:m,t; e.g. H:f,g; H:f,g,s; H:f,g,t; H:g,p; H:g,p,u; H:g,q; H:g,s,t; H:g,t; H:g, _{Z51} bzw. H:g,m; H:g,m,s,t; H:m,t	x x	liquid liquid	1 ml 5 ml
TR 5408					
TR 1409	Anti-Salmonella H:h	mAb, H:e,h		liquid	1 ml
TR 1410	Anti-Salmonella H:i	mAb, H:i	x x	liquid liquid	1 ml 5 ml
TR 5410					
TR 1411	Anti-Salmonella H:k	mAb, H:k	x	lyophilised	1 ml
TR 1412	Anti-Salmonella H:L	mAb, H: ℓ ,v; H: ℓ ,w; H: ℓ , _{Z13} ; H: ℓ , _{Z28} ; H: ℓ , _{Z13,Z28}	x x	liquid liquid	1 ml 5 ml
TR 5412					
TS 1413	Anti-Salmonella H:m	pAb, H:g,m; H:g,m,s; H:g,m,s,t; H:g,m,q; H:g,m,p,s; H:g,m,t; H:m,p,t,u; H:m,t		lyophilised	1 ml
TR 1438	Anti-Salmonella H:n	mAb, H:e,n,x; H:e,n, _{Z15} ; H:e,n,x, _{Z15}	x	liquid	1 ml
TS 1414	Anti-Salmonella H:p	pAb, H:g,m,p,s; H:g,p; H:g,p,s; H:g,p,u; H:m,p,t,u		lyophilised	1 ml
TS 1415	Anti-Salmonella H:q	pAb, H:g,q; H:g,m,q		lyophilised	1 ml
TR 1416	Anti-Salmonella H:r	mAb, H:r	x	liquid	1 ml
TS 1417	Anti-Salmonella H:s	pAb, H:f,g,s; H:g,m,s; H:g,m,s,t; H:g,p,s; H:g,s,t		lyophilised	1 ml
TS 1418	Anti-Salmonella H:t	pAb, H:m,t; H:f,g,t; H:g,m,t; H:g,m,s,t; H:g,t; H:g,s,t; H:m,p,t,u		lyophilised	1 ml
TS 1419	Anti-Salmonella H:u	pAb, H:g,p,u; H:m,p,t,u		lyophilised	1 ml
TS 1420	Anti-Salmonella H:v	pAb, H: ℓ ,v		lyophilised	1 ml
TS 1421	Anti-Salmonella H:w	pAb, H: ℓ ,w		lyophilised	1 ml
TS 1422	Anti-Salmonella H:x	pAb, H:e,n,x; H:e,n,x, _{Z15}		lyophilised	1 ml
TR 1423	Anti-Salmonella H:y	mAb, H:y	x	liquid	1 ml
TR 1424	Anti-Salmonella H:z	mAb, H:z Identifies H:z in Subspecies I, II and III	x	liquid	1 ml
TS 1425	Anti-Salmonella H:z_4,z_{23}	pAb, H: z_4,z_{23} ; H: z_4,z_{24} ; H: z_4,z_{32} ; H: z_4,z_{23},z_{32}		lyophilised	1 ml
TS 1426	Anti-Salmonella H:z_6	pAb, H: z_6		lyophilised	1 ml
TR 1427	Anti-Salmonella H:z_{10}	mAb, H: z_{10}	x	liquid	1 ml
TS 1428	Anti-Salmonella H:z_{15}	pAb, H:e,n, _{Z15} ; H:e,n,x, _{Z15}		lyophilised	1 ml
TR 1440	Anti-Salmonella H:z_{23}	mAb, H: z_4,z_{23} ; H: z_4,z_{23},z_{32}		lyophilised	1 ml

Art. No.	Product	Description	Phase induction	Liquid Lyo.	Packing
TS 1429	Anti-Salmonella H:Z_{24}	pAb, H: Z_4,Z_{24}		lyophilised	1 ml
TS 1449	Anti-Salmonella H:Z_{28}	pAb, H: $\emptyset,Z_{28}; H:\emptyset,Z_{13},Z_{28}$		lyophilised	1 ml
TS 1430	Anti-Salmonella H:Z_{29}	pAb, H: Z_{29}		lyophilised	1 ml
TS 1431	Anti-Salmonella H:Z_{32}	pAb, H: Z_4,Z_{32}		lyophilised	1 ml
TR 1445	Anti-Salmonella H:Z_{35}	mAb, H: Z_{35}	x	lyophilised	1 ml
TR 1447	Anti-Salmonella H:Z_{38}	mAb, H: Z_{38}	x	lyophilised	1 ml
TR 1448	Anti-Salmonella H:Z_{41}	mAb, H: Z_{41}	x	lyophilised	1 ml
TR 1437	Anti-Salmonella H:1	mAb, H:1,2; H:1,5; H:1,6; H:1,7;	x	liquid	1 ml
TR 5437		H:1,2,7; H:1,5,7	x	liquid	5 ml
TR 1433	Anti-Salmonella H:2	mAb, H:1,2		lyophilised	1 ml
TR 5433				lyophilised	5 ml
TS 1434	Anti-Salmonella H:5	pAb, H:1,5		lyophilised	1 ml
TR 1435	Anti-Salmonella H:6	mAb, H:1,6		lyophilised	1 ml
TS 1436	Anti-Salmonella H:7	pAb, H:1,7		lyophilised	1 ml

Control antigens for the Anti-Salmonella test reagents

The control antigens are used to check the agglutinability of the Anti-Salmonella test reagents and for quality control when carrying out the slide agglutination test.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: 0.5 % formalin

Art. No.	Product	Description	Liquid Lyo.	Packing
TS 1501	Control antigen Salmonella Paratyphi A-OH	2,12:a:[1,5] (Usually occurs as a monophasic variant.)	liquid	5 ml
TS 1502	Control antigen Salmonella Paratyphi B-OH	1,4,[5],12:b:1,2	liquid	5 ml
TS 1503	Control antigen Salmonella Paratyphi C-OH	6,7,[Vi]:c:1,5 (Use TS 1507 for Vi)	liquid	5 ml
TS 1504	Control antigen Salmonella Typhi-OH	9,12, [Vi]:d- (Use TS 1507 for Vi)	liquid	5 ml
TS 1505	Control antigen Salmonella Typhimurium-OH	1,4,[5],12:i:1,2 (Often occurs as a monophasic variant.)	liquid	5 ml
TS 1506	Control antigen Salmonella Enteritidis-OH	1,9,12:g,m:-	liquid	5 ml
TS 1507	Control antigen Salmonella Vi		liquid	5 ml

Examples of Serotyping

Suspected *S. Enteritidis*

Antigen detection

Test Reagent	Agglutination of a <i>Salmonella</i> isolate		
Anti-Salmonella A-67 + Vi, omnivalent	+		
Anti-Salmonella I (A-E + Vi)	+		
Anti-Salmonella Group D (O:9, Vi)	+		
Anti-Salmonella O:9	+		
Anti-Salmonella O:46	-		
Anti-Salmonella H:s	-		
Anti-Salmonella H:q	-		
Result of O antigen determination	Suspected <i>S. Enteritidis</i> O:9 (D ₁)		
Anti-Salmonella H:g ¹⁾	+	+	-
Anti-Salmonella H:m (monospecific)	+	-	
Result antigen formula	<i>S. Enteritidis</i> 1,9,12:g,m:-		
Anti-Salmonella H:p (monospecific)		+	
Result of antigen formula	<i>S. Dublin</i> 9,12,[Vi]:g,p:-		
Anti-Salmonella H:L ²⁾			+
Anti-Salmonella H:v (monospecific)			+
Anti-Salmonella H:1 ³⁾			+
Anti-Salmonella H:5 (monospecific)			+
Result of antigen formula	<i>S. Panama</i> 1,9,12:l,v:1,5		

¹⁾ A positive result with Anti-Salmonella H:g proves that antigen H:g is present. H:m,t cannot be present. Using Anti-Salmonella H:g,m instead of Anti-Salmonella H:g in this example would be inappropriate, since Anti-Salmonella H:g,m records all combinations of antigen H:g including antigen H:m,t. A positive result using Anti-Salmonella H:g,m does not prove that H g,m is present.

²⁾ A positive result with Anti-Salmonella H:L proves that antigen H:L is present and is thus equivalent to the test with the polyclonal test reagent Anti-Salmonella H:L,v, which does not react with H:L,v only, but with all combinations of antigen H:L.

³⁾ Anti-Salmonella H:1 agglutinates all antigen combinations of the H:1 complex (H:1,2, H:1,5, H:1,6, H:1,7). An additional testing of the present antigen combination is possible with the monospecific test reagents Anti-Salmonella H:2, Anti-Salmonella H:5, Anti-Salmonella H:6 and Anti-Salmonella H:7.

Suspected *S. Typhimurium*

Antigen detection

Test Reagent	Agglutination of a <i>Salmonella</i> isolate				
Anti-Salmonella A-67+ Vi, omnivalent	+				
Anti-Salmonella I (A-E + Vi)	+				
Anti-Salmonella Group D (O:9, Vi)	+				
Anti-Salmonella Group B (O:4,5,27)	+				
Anti-Salmonella O:5	+ -				
Result of O antigen determination	Suspected <i>S. Typhimurium</i> O:4,5		Suspected <i>S. Typhimurium</i> O:4		
Anti-Salmonella H:i	+	-	+	-	-
Anti-Salmonella H:1 ¹⁾	+	-	+	-	
Anti-Salmonella H:2	+	-	+	-	
Result of antigen formula	<i>S. Typhi-murium O5+</i> 1,4,5,12:i:1,2	<i>S. 1,4,5,12:i:-</i> monophasic variant	<i>S. Typhi-murium O5-</i> 1,4,12:i:1,2	<i>S. 1,4,12:i:-</i> monophasic variant	
Anti-Salmonella H:g oder Anti-Salmonella H:g,m ²⁾					+ +
Anti-Salmonella H:f					+ +
Anti-Salmonella H:s					- +
Result of antigen formula					<i>S. Derby</i> <i>S. Agona</i> 1,4,12:f,g:- 1,4,12:f,g,s:-

¹⁾ See note on Anti-Salmonella H:1, suspected *S. Enteritidis*

²⁾ A positive result with Anti-Salmonella H:g proves that antigen H:g is present. Antigen H:m,t cannot be present. In this example, instead of Anti-Salmonella H:g, it would be possible to use Anti-Salmonella H:g,m, which records all combinations of antigen H:g including antigen H:m,t. The subsequent agglutination with Anti-H:f excludes H:m,t.

Strains with H:m,t can be easily identified with Anti-Salmonella H:m and Anti-Salmonella H:t.

In general, we recommend the use of Anti-Salmonella H:g if an H antigen in the G complex is suspected because a positive result verifies the presence of antigen H:g.

Salmonella O test antigens for the Widal reaction

The test antigens are intended for use in establishing the existence and determining the quantity of specific agglutinating Salmonella antibodies (or agglutinins) in human sera or sera of other origin. They are made up of suspensions of the corresponding serovars in PBS and 0.5 % formalin. Before use, the liquid antigen is prepared by diluting with PBS in a ratio of 1:10.

Procedure: test tube agglutination or agglutination on MTP | Storage: 2...8 °C | Preservative: 0.5 % formalin

Art. No.	Product	Description	Liquid Lyo.	Packing
TS 1606	Paratyphi A-O test antigen	(2,12)	liquid	10 ml
TS 1601	Paratyphi B-O test antigen	(1,4,5,12)	liquid	10 ml
TS 1607	Paratyphi C-O test antigen	(6,7)	liquid	10 ml
TS 1602	Typhi O test antigen	(9,12)	liquid	10 ml

Salmonella OH test antigens for the Widal reaction

The antigens are used for the detection and determination of the quantity of Salmonella O and H agglutinins in patient serum. They are made up of suspensions of the corresponding serovars in PBS and 0.5 % formalin. Before use, the ready-to-use antigen is prepared by diluting with PBS in a ratio of 1:10.

Procedure: test tube agglutination or agglutination on MTP | Storage: 2...8 °C | Preservative: 0.5 % formalin

Art. No.	Product	Description	Liquid Lyo.	Packing
TS 1613	Paratyphi A-OH test antigen	(2,12:a:-)	liquid	10 ml
TS 1614	Paratyphi B-OH test antigen	(1,4,5,12:b:1,2)	liquid	10 ml
TS 1615	Paratyphi C-OH test antigen	(6,7:c:1,5)	liquid	10 ml
TS 1616	Typhi OH test antigen	(9,12:d:-)	liquid	10 ml
TS 1611	Typhimurium OH test antigen	(1,4,5,12:i:1,2)	liquid	10 ml
TS 1612	Enteritidis OH test antigen	(1,9,12:g,m:-)	liquid	10 ml

Salmonella H test antigens for the Widal reaction

The test antigens are used for identification and quantitative verification of the Salmonella H agglutinins in the patient serum in cases of infection with *S. Paratyphi A* (H:a), *S. Paratyphi B* (H:b/1st phase and H:1,2/2nd phase), *S. Paratyphi C* (H:c/1st phase) and *S. Typhi* (H:d). They are made up of killed bacterial suspensions of selected serovars in PBS and 0.5 % formalin. Positive reactions from antibodies against O antigens are excluded by the selection of the production strains. Before use, the liquid antigen is prepared by diluting with PBS in a ratio of 1:10.

Procedure: test tube agglutination | Storage: 2...8 °C | Preservative: 0.5 % formalin

Art. No.	Product	Liquid Lyo.	Packing
TS 1631	H:a test antigen	liquid	10 ml
TS 1632	H:b test antigen	liquid	10 ml
TS 1633	H:c test antigen	liquid	10 ml
TS 1603	H:d test antigen	liquid	10 ml

Control sera for the *Salmonella* O and OH test antigens

The control sera are intended for use in system control and in checking the agglutinability of the *Salmonella* test antigens in the Widal reaction. They are prepared from immunosera from rabbits or from monoclonal antibodies (cell culture supernatant from hybridoma cell lines). The test with O and OH test antigens can be performed in test tubes or on a microtitre plate. The control sera are lyophilised and must be dissolved in 1 ml distilled water before use.

Procedure: test tube agglutination or agglutination on MTP | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Liquid Lyo.	Packing
TS 1626	Anti-Salmonella Paratyphi A	lyophilised	1 ml
TS 1604	Anti-Salmonella Paratyphi B	lyophilised	1 ml
TS 1627	Anti-Salmonella Paratyphi C	lyophilised	1 ml
TS 1605	Anti-Salmonella Typhi	lyophilised	1 ml
TS 1624	Anti-Salmonella Typhimurium	lyophilised	1 ml
TS 1625	Anti-Salmonella Enteritidis	lyophilised	1 ml

Control sera for the *Salmonella* H test antigens

The control sera are intended for use in system control and in checking the agglutinability of the *Salmonella* test antigens in the Widal reaction. They are prepared from immunosera from rabbits or from monoclonal antibodies (cell culture supernatant from hybridoma cell lines). The test for the H antigens is carried out in a test tube. The control sera are lyophilised and must be dissolved in 1 ml distilled water before use.

Procedure: test tube agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product		Liquid Lyo.	Packing
TS 1641	Anti-Salmonella H:a	(2,12)	lyophilised	1 ml
TS 1642	Anti-Salmonella H:b	(1,4,5,12)	lyophilised	1 ml
TS 1643	Anti-Salmonella H:c	(6,7)	lyophilised	1 ml
TS 1644	Anti-Salmonella H:d	(9,12)	lyophilised	1 ml

Do you have any question on how to use the products?
Our test scheme for salmonella serotyping is available on request.
Simply call us or contact us through our e-mail.

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Shigella Diagnostics

DIAGNOSTICS WITH PASSION



Fantastic test reagents for *Shigella* diagnostics

Shigella enteritis or shigellosis is an infection of the intestines induced by *Shigella*. It is spread by contaminated water or food. It can also be transmitted by flies in some cases. *Shigella* are divided into four species: *Shigella dysenteriae*, *Shigella flexneri*, *Shigella boydii* and *Shigella sonnei*.

Contents

- Polyspecific test reagents
Anti-Shigella
- Monospecific test reagents
Anti-Shigella
- Control antigens for the
Anti-Shigella test reagents



Shigella Diagnostics

Polyspecific test reagents Anti-Shigella

Serological detection of *Shigella* strains using the slide agglutination test. The test reagents are lyophilised and must be dissolved in 1 ml or 5 ml distilled water before use.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid Lyo.	Packing
TR 1811	Anti-Shigella I	Contains antibodies against <i>S. flexneri</i> , type 1 to 6, group 3,4 (y), 6 and 7,8 (x) and <i>S. sonnei</i> S and F form (phase I and II).	lyophilised	1 ml
TR 1815		Contains no antibodies against <i>S. dysenteriae</i> and <i>S. boydii</i> . Mixture of monoclonal antibodies in the form of cell culture supernatants and immune sera from rabbits.	lyophilised	5 ml
TS 1821	Anti-Shigella II	Contains antibodies against <i>S. dysenteriae</i> , type 1 to 10. Contains no antibodies against <i>S. flexneri</i> , <i>S. boydii</i> and <i>S. sonnei</i> . Test reagent is prepared from immunosera from rabbits.	lyophilised	1 ml
TS 1825			lyophilised	5 ml
TS 1831	Anti-Shigella III	Contains antibodies against <i>S. boydii</i> , type 1 to 15. Test reagent is prepared from immunosera from rabbits.	lyophilised	1 ml
TS 1901	Anti-Shigella flexneri	Contains antibodies against <i>S. flexneri</i> type 1 - 6 and group 3,4 (y), 6 and 7,8 (x). Contains no antibodies against <i>S. dysenteriae</i> , <i>S. boydii</i> and <i>S. sonnei</i> . Test reagent is prepared from immunosera from rabbits.	lyophilised	1 ml

Monospecific test reagents Anti-Shigella

Used to determine the serotype by serological detection of the *Shigella* O antigens. They are prepared from immunosera from rabbits or from monoclonal antibodies (cell culture supernatant from hybridoma cell lines). Lyophilisates must be dissolved in 1 ml distilled water before use.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid Lyo.	Packing
TS 2001	Anti-Shigella dysenteriae type 1	monospecific	lyophilised	1 ml
TS 2002	Anti-Shigella dysenteriae type 2	monospecific	lyophilised	1 ml
TS 2003	Anti-Shigella flexneri type 1	monospecific	lyophilised	1 ml
TS 2004	Anti-Shigella flexneri type 2	monospecific	lyophilised	1 ml
TS 2005	Anti-Shigella flexneri type 3	monospecific	lyophilised	1 ml
TS 2006	Anti-Shigella flexneri type 4	monospecific	lyophilised	1 ml
TS 2007	Anti-Shigella flexneri type 5	monospecific	lyophilised	1 ml
TS 2008	Anti-Shigella flexneri type 6	monospecific	lyophilised	1 ml
TS 2009	Anti-Shigella flexneri group 3,4 (y)	monospecific	liquid	1 ml
TS 2010	Anti-Shigella flexneri group 6	monospecific	lyophilised	1 ml
TS 2011	Anti-Shigella flexneri group 7,8 (x)	monospecific	lyophilised	1 ml
TR 2012	Anti-Shigella sonnei S form	phase I, monospecific	lyophilised	1 ml
TR 2013	Anti-Shigella sonnei F form	phase II, monospecific	lyophilised	1 ml
TR 2014	Anti-Shigella sonnei S form and F form	phase I and phase II, monospecific	lyophilised	1 ml

Control antigens for the Anti-Shigella test reagents

The control antigens are used to check the agglutinability of the Anti-Shigella test reagents and for quality control when carrying out the slide agglutination test.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: 0.5 % formalin

Art. No.	Product	Description	Liquid Lyo.	Packing
TS 1510	Control antigen Shigella flexneri	<i>S. flexneri</i> type 1b, 2a, 3a, 4a	liquid	2 ml
TS 1511	Control antigen Shigella dysenteriae	<i>S. dysenteriae</i> type 1, 2, 3, 7	liquid	2 ml
TS 1512	Control antigen Shigella boydii	<i>S. boydii</i> type 1, 2, 5, 8	liquid	2 ml
TS 1513	Control antigen Shigella sonnei	<i>S. sonnei</i> S-form (phase I) <i>S. sonnei</i> F-form (phase II)	liquid	2 ml

Fields of application for quality control

Control antigen Shigella flexneri	TS 1510	Control antigen Shigella dysenteriae	TS 1511	Control antigen Shigella boydii	TS 1512	Control antigen Shigella sonnei	TS 1513
Anti-Shigella I	TR 1811 TR 1815	Anti-Shigella II	TS 1821 TS 1825	Anti-Shigella III	TS 1831	Anti-Shigella I	TR 1811 TR 1815
Anti-Shigella flexneri	TS 1901	Anti-Shigella dysenteriae type 1	TS 2001			Anti-Shigella sonnei S-form (phase I)	TR 2012
		Anti-Shigella dysenteriae type 2	TS 2002			Anti-Shigella sonnei F-form (phase II)	TR 2013
						Anti-Shigella sonnei S-& F-form (phase I & II)	TR 2014

Do you have any question on how to use the products?
 Our test scheme for shigella serotyping is available on request.
 Simply call us or contact us through our e-mail.

Yersinia Diagnostics

DIAGNOSTICS WITH PASSION



Serotyping according to your taste

Yersiniosis is a gastroenteritis usually spread in food that is caused by infection with the bacterium *Yersinia enterocolitica*. Yersiniosis is a zoonotic disease, that is, an infection that is transmitted from animal to human. The natural reservoirs of the pathogen *Y. enterocolitica* are animals of various species with pigs considered the primary reservoir for human pathogenic *Y. enterocolitica* serotypes. Transmission is primarily via food (www.rki.de).

Contents

- Monospecific test reagents
Anti-*Yersinia enterocolitica* O
- *Yersinia enterocolitica* O test antigens for the Widal reaction
- Control sera Anti-*Yersinia* for the Widal reaction



Yersinia Diagnostics

Monospecific test reagents Anti-Yersinia enterocolitica O

The test reagents are used to identify the serovar of *Yersinia enterocolitica* strains isolated from test material of human or other origin by means of slide agglutination. If the *Yersinia enterocolitica* strain contains an antigen covered by the test reagent's range of specificity, this antigen will be bound when mixed with the specific antibody. The antigen-antibody reaction results in clearly visible agglutination of the strain. The test reagents are absorbed sera from immunised rabbits. Agglutinins against heterologous *Yersinia enterocolitica* serotypes and against selected representatives of other *Enterobacteriaceae* were removed from the test sera by absorption. The test reagents are lyophilised and must be dissolved in 1 ml distilled water before use.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid Lyo.	Packing
TS 1701	Anti-Yersinia enterocolitica O 3	monospecific	lyophilised	1 ml
TS 1704	Anti-Yersinia enterocolitica O 5	The pathogenic serovar O:5,27 and the non-pathogenic serovar O:5 cannot be differentiated. This issue can be clarified biochemically, for example, using biovar identification.	lyophilised	1 ml
TS 1705	Anti-Yersinia enterocolitica O 8	monospecific	lyophilised	1 ml
TS 1703	Anti-Yersinia enterocolitica O 9	monospecific	lyophilised	1 ml
TS 1706	Anti-Yersinia enterocolitica O 27	Test reagent that can be used in addition to analyse the presence or absence of the antigen O:27 in O:5 strains.	lyophilised	1 ml

Yersinia enterocolitica O test antigens for the Widal reaction

The test antigens are intended for use in detecting the existence and determining the quantity of specific agglutinating *Yersinia enterocolitica* O antibodies (or agglutinins) in human sera or sera of other origin using the Widal reaction. The test is performed on a microtitre plate. The test antigens are lyophilised and must be dissolved in 3 ml distilled water before use.

Procedure: agglutination on MTP | Storage: 2...8 °C | Preservative: thiomersal 0.2 mg/ml

Art. No.	Product	Liquid Lyo.	Packing
TS 1721	Yersinia enterocolitica-O test antigen (3)	lyophilised	3 ml
TS 1724	Yersinia enterocolitica-O test antigen (5)	lyophilised	3 ml
TS 1723	Yersinia enterocolitica-O test antigen (9)	lyophilised	3 ml

Control sera Anti-Yersinia for the Widal reaction

The control sera are used for system controls and to verify the agglutinability of the *Yersinia enterocolitica* test antigens in the Widal reaction. The test is performed on a microtitre plate. The control sera are lyophilised and must be dissolved in 1 ml distilled water before use.

Procedure: agglutination on MTP | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Liquid Lyo.	Packing
TS 1733	Anti-Yersinia enterocolitica O 3	lyophilised	1 ml
TS 1734	Anti-Yersinia enterocolitica O 5	lyophilised	1 ml
TS 1735	Anti-Yersinia enterocolitica O 9	lyophilised	1 ml

Coli Diagnostics

DIAGNOSTICS WITH PASSION



Here you'll find genuine products only

The natural habitat of *E. coli* is the intestines of animals and humans. *E. coli* is therefore an indicator organism for faecal contamination of drinking water, swimming water and foods (www.infektionsnetz.at).

Contents

- Polyspecific test reagents Anti-Coli
- Monospecific test reagents Anti-Coli
- Veterinary medicine: young poultry
- Veterinary medicine: young cattles
- Veterinary medicine: young pigs



Coli Diagnostics

Polyspecific test reagents Anti-Coli

The test reagents are intended for use in the serological detection of the serovar *E. coli* strains isolated from test material of human or other origin, using slide agglutination. They are prepared from immunosera from rabbits and monoclonal antibodies of the corresponding specificity in the form of cell culture supernatants. The test reagent reacts with *E. coli* strains, which contain antigens of the specificity named in the declaration.

There is the possibility of cross-reactions with other *E. coli* antigens or other *Enterobacteriaceae* due to related antigens.

The test reagents are lyophilised and must be dissolved in 1 ml or 5 ml distilled water before use, acc. to the amount given on the label.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid Lyo.	Packing
TS 2111	Anti-Coli I	Contains antibodies against O 26:K 60, O 44:K 74, O 114:K90, O 125:K 70, O 142:K 86, O 158:K - Does not contain antibodies with specificity for Anti-Coli II and Anti-Coli III	lyophilised	1 ml
TS 2115			lyophilised	5 ml
TR 2121	Anti-Coli II	Contains antibodies against O 55:K 59, O 86:K 61, O 91:K -, O 111:K 58, O 119:K 69, O 126:K 71, O 127:K 63, O 128:K 67 Does not contain antibodies with specificity for Anti-Coli I and Anti-Coli III	lyophilised	1 ml
TR 2125			lyophilised	5 ml
TR 2131	Anti-Coli III	Contains antibodies against O 25:K 11, O 78:K 80, O 103:K -, O 118:K -, O 124:K 72, O 145:K -, O 157:K -, O 164:K - Does not contain antibodies with specificity for Anti-Coli I and Anti-Coli II	lyophilised	1 ml
TR 2135			lyophilised	5 ml

Monospecific test reagents Anti-Coli

The test reagents are used for the serological detection and serovar determination of isolated *E. coli* strains from human test material or other origin by slide agglutination and Widal reaction (confirmation test).

Agglutination procedures are considered only to provide an indication but not verification of pathogenicity. For unequivocal allocation of *E. coli* isolates to pathogenic groups, it is necessary to determine the virulence factors (source: R. Prager, H. Tschaep, Mikrobiologie 17 (2007), 213-219). The test reagents are produced from immune sera from rabbits and monoclonal antibodies of the relevant specificity in the form of cell culture supernatant.

The test reagents are lyophilised and must be dissolved in 1 ml distilled water before use.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Liquid Lyo.	Packing
TS 2201	Anti-Coli O 25:K 11	lyophilised	1 ml
TS 2202	Anti-Coli O 26:K 60	lyophilised	1 ml
TS 2203	Anti-Coli O 44:K 74	lyophilised	1 ml
TS 2204	Anti-Coli O 55:K 59	lyophilised	1 ml
TR 2205	Anti-Coli O 78:K 80	lyophilised	1 ml
TS 2206	Anti-Coli O 86:K 61	lyophilised	1 ml
TS 2222	Anti-Coli O 91:K -	lyophilised	1 ml
TS 2216	Anti-Coli O 103:K -	lyophilised	1 ml
TS 2207	Anti-Coli O 111:K 58	lyophilised	1 ml
TS 2208	Anti-Coli O 114:K 90	lyophilised	1 ml
TS 2220	Anti-Coli O 118:K -	lyophilised	1 ml
TS 2209	Anti-Coli O 119:K 69	lyophilised	1 ml
TR 2210	Anti-Coli O 124:K 72	lyophilised	1 ml
TS 2211	Anti-Coli O 125:K 70	lyophilised	1 ml
TS 2212	Anti-Coli O 126:K 71	lyophilised	1 ml
TS 2213	Anti-Coli O 127:K 63	lyophilised	1 ml
TS 2214	Anti-Coli O 128:K 67	lyophilised	1 ml
TS 2215	Anti-Coli O 142:K 86	lyophilised	1 ml
TS 2221	Anti-Coli O 145:K -	lyophilised	1 ml
TR 2218	Anti-Coli O 157:K -	lyophilised	1 ml
TS 2219	Anti-Coli O 158:K -	lyophilised	1 ml
TS 2217	Anti-Coli O 164:K -	lyophilised	1 ml

E. coli relevant to veterinary medicine

Coli diagnostics in young poultry

The test sera are used to test for the presence of type-specific antigens with *Escherichia coli* isolates from poultry. They are used as evidence of antigens to the cell surface of the *E. coli* isolate (O antigens) using slide agglutination (serotyping). A culture of the isolate at room temperature (18...26 °C) encourages the formation of the O antigen. These specificities are also identified in humans as extraintestinal pathogenic *E. coli* (ExPEC) variants.

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid Lyo.	Packing
TR 2311	Anti-Coli A	polyspecific (O 1, O 2, O 18, O 78) serological detection of O 1, O 2, O 18 or O 78 antigen.	lyophilised	1 ml
TS 2401	Anti-Coli O 1	monospecific	lyophilised	1 ml
TS 2501	Gruber Widal Serum Anti-Coli O 1	for the confirmation test	lyophilised	1 ml
TS 2402	Anti-Coli O 2	monospecific	lyophilised	1 ml
TS 2502	Gruber Widal Serum Anti-Coli O 2	for the confirmation test	lyophilised	1 ml
TS 2403	Anti-Coli O 18	monospecific	lyophilised	1 ml
TS 2503	Gruber Widal Serum Anti-Coli O 18	for the confirmation test	lyophilised	1 ml
TR 2205	Anti-Coli O 78:K 80	monospecific	lyophilised	1 ml

Coli diagnostics in young cattles

The test sera are used to test for the presence of type-specific antigens with *Escherichia coli* isolates from cattles (serotyping). They are used as evidence of antigens to the cell surface of the *E. coli* isolate (O antigen, K antigen and F antigen) using slide agglutination. The F 5 (K 99) antigen is often not formed in sufficient quantities on standard culture media. We therefore recommend the use of Minca Agar (sifin Minca Agar, modified and sifin Minca Supplement) when culturing to promote the formation of the fimbrial antigen F 5 (K 99).

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid Lyo.	Packing
TS 2601	Anti-Coli C	polyspecific (O 9:K 35, O 101:K 28, O 101:K 30, O 101:K 32) Contains antibodies directed against the <i>E. coli</i> types listed as monospecific (TS 2611, TS 2612, TS 2613, TS 2614) and the fimbrial antigen F 5 (K 99).	liquid	1 ml
TS 2615	Anti-Coli F 5 (K 99)	monospecific	liquid	1 ml
TS 2611	Anti-Coli O 9:K 35	monospecific	liquid	1 ml
TS 2612	Anti-Coli O 101:K 28	monospecific	liquid	1 ml
TS 2613	Anti-Coli O 101:K 30	monospecific	liquid	1 ml
TS 2614	Anti-Coli O 101:K 32	monospecific	liquid	1 ml
TR 2205	Anti-Coli O 78:K 80	monospecific	lyophilised	1 ml
TN 1722	Minca Agar, modified	see also ready-to-use culture media		4 x 100 ml
TN 1040	Minca Agar, modified	see also dehydrated culture media		500 g
TN 1334	Minca Supplement	see also supplements		12 x 1 vial

Coli diagnostics in young pigs

The test sera are used to test for the presence of typespecific antigens with *Escherichia coli* isolates from pigs. They are used as evidence of antigens to the cell surface of the *E. coli* isolate (O antigen, K antigen and F antigen) using slide agglutination (serotyping).

Procedure: slide agglutination | Storage: 2...8 °C | Preservative: sodium azide 0.9 mg/ml

Art. No.	Product	Description	Liquid Lyo.	Packing
TS 2701	Anti-Coli P	polyspecific (O 8:K 87, O 138:K 81, O 139:K 82, O 141:K 85, O 147:K 89, O 149:K 91) Contains antibodies directed against the <i>E. coli</i> types listed as monospecific (TS 2711, TS 2712, TS 2713, TS 2714, TS 2715, TS 2716) and the fimbrial antigen F 4 (K 88).	liquid	1 ml
TS 2717	Anti-Coli F 4 (K 88)	monospecific	liquid	1 ml
TS 2711	Anti-Coli O 8:K 87	monospecific	liquid	1 ml
TS 2712	Anti-Coli O 138:K 81	monospecific	liquid	1 ml
TS 2713	Anti-Coli O 139:K 82	monospecific	liquid	1 ml
TS 2714	Anti-Coli O 141:K 85	monospecific	liquid	1 ml
TS 2715	Anti-Coli O 147:K 89	monospecific	liquid	1 ml
TS 2716	Anti-Coli O 149:K 91	monospecific	liquid	1 ml

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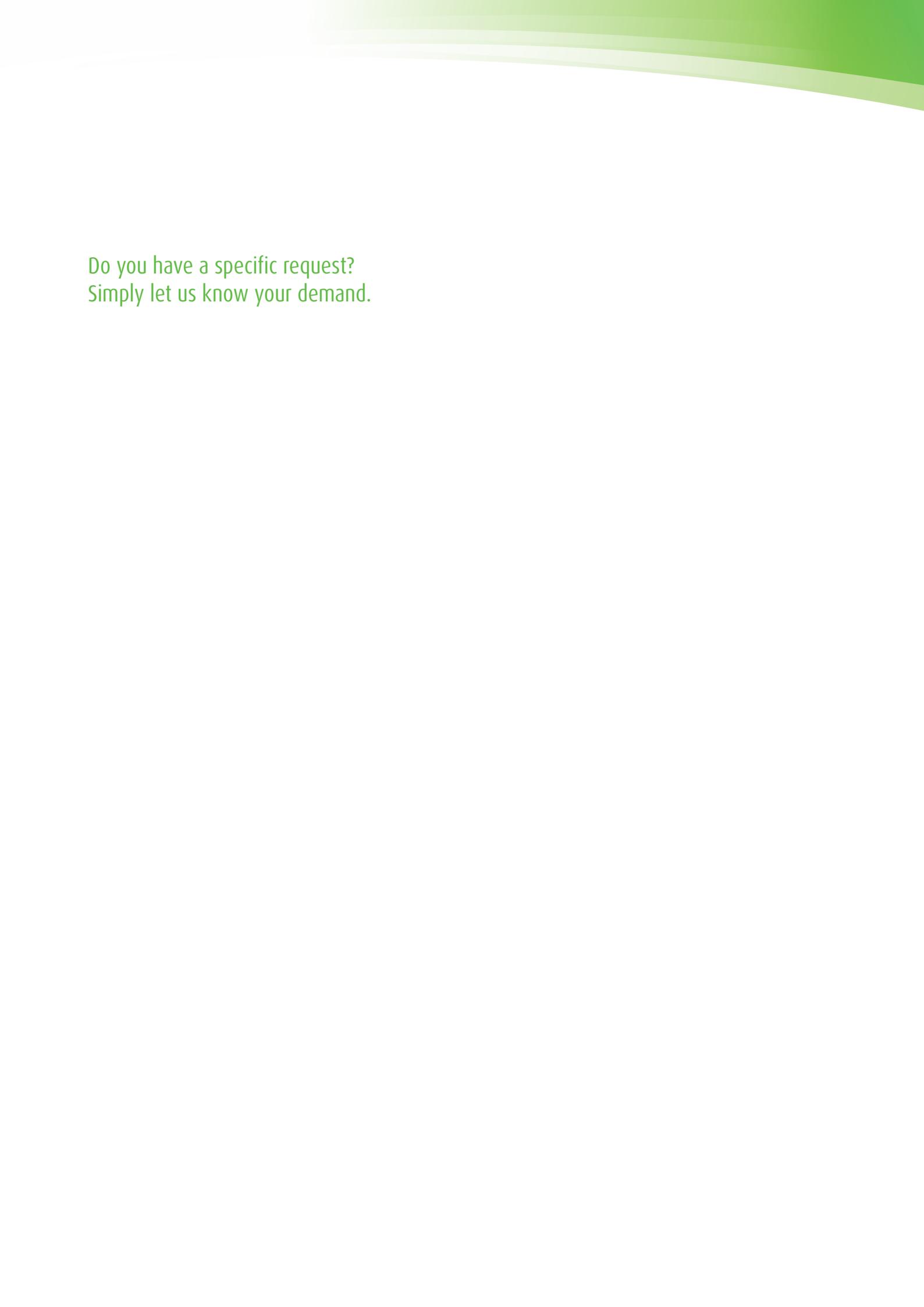
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