

# The air is clear.

Granulated Culture Media



# Clear the air with Granulated Culture Media



The handling of powdered culture media usually results in the air borne spread of powder in the working environment.

The powder of routinely used culture media often contains hazardous/toxic substances (Table 1: Hazardous/toxic substances). Inhalation of powder containing hazardous/toxic substances is unhealthy. Whilst contamination of exposed skin, eyes and ears often leads to allergic reactions.

**Table 1:** Some hazardous/toxic substances found in routinely used culture media bases

Test parameters	Examples of culture media bases	Hazardous/toxic substances
Enterobacteriaceae	Bile salt type media*	Bile salt(s)
E.coli	Brilliant Green 2% Bile Broth	Brilliant green, Bile salt
Coliform bacteria	Endo Agar, DEV Endo Agar	Fuchsin
Salmonella	RVS, Diasalm, MSRV, Selenite Cystine Broth, Selenite Enrichment Broth acc. Leifson	Malachite green, Selenite
	Tetrathionate Broths XLT- 4 Agar	Tetrathionate, Bile salts Tergitol
Listeria	Fraser Broth, Palcam Agar, L-PALCAM Broth, Oxford Agar	Lithium chloride
	LEB UVM	Acridiflavine, Cycloheximide Acridiflavine
Staph. aureus	Baird Parker Agar, Giolitti Cantoni Broth, Liquid Baird Parker	Lithium chloride
Enterococcus	ReadyCULT® Enterococci 100 Kranep Agar	Sodium azide Cycloheximide, Sodium azide, Thiocyanate
	Kanamycin Aesculin Azide Agar Azide Dextrose Broth,	Kanamycin, Sodium azide Sodium azide
Streptococci	Streptococci Selective Agar, Streptococci Broth	Sodium azide
Yeast and moulds	Selective agar for pathogenic fungi	Chloramphenicol, Cycloheximide
	RBC, DRBC Dichloran Glycerol (DG 18) Agar	Rose bengal, Dichloran Dichloran, Chloramphenicol

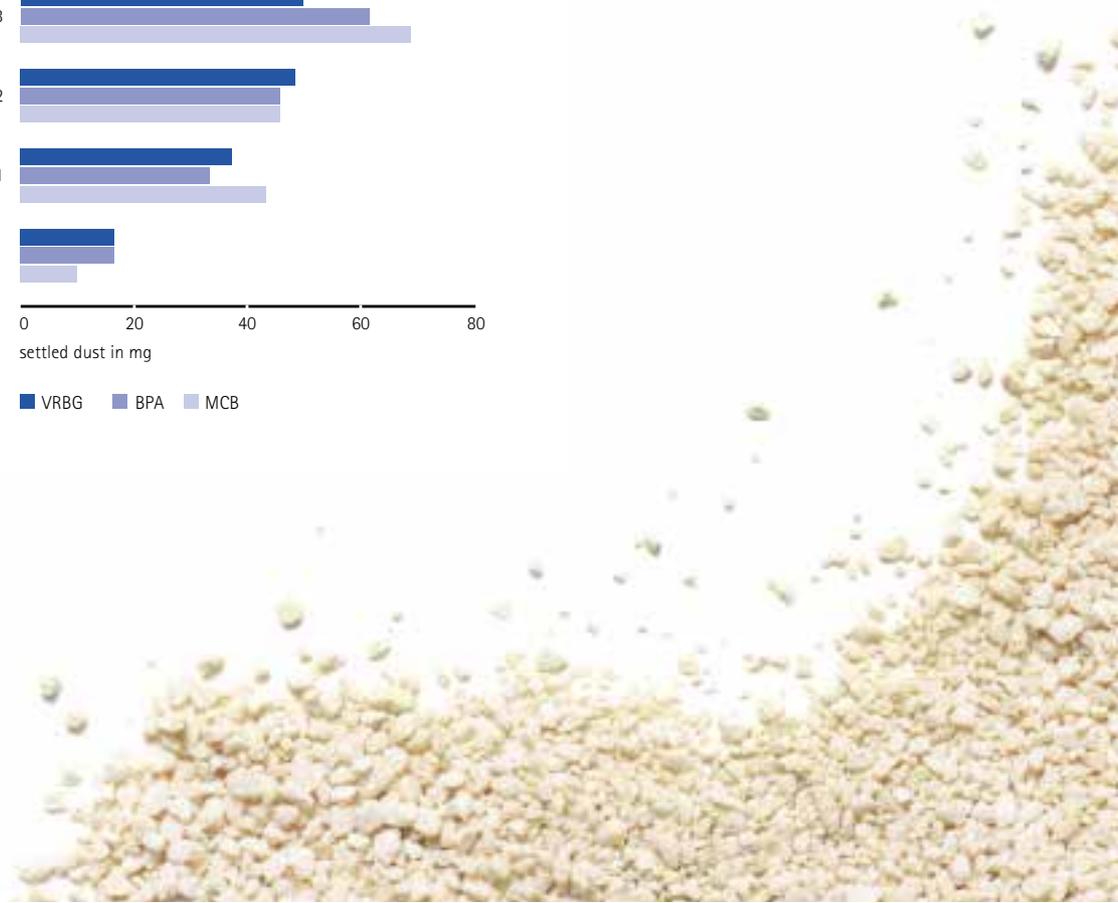
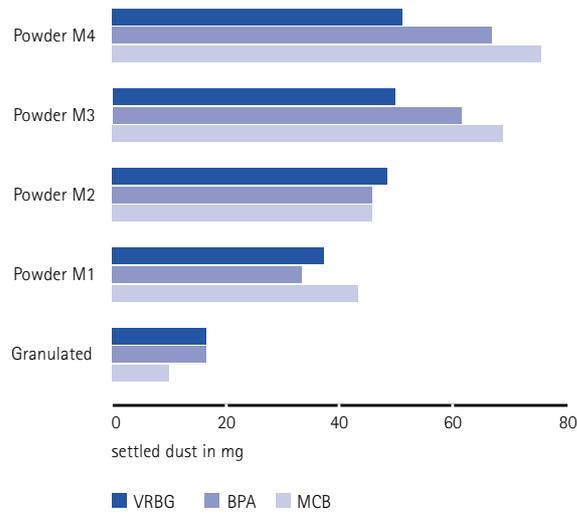
\* e.g. VRB Agar, VRBD Agar, MacConkey Agar, Enterobacteriaceae Enrichment Broth, MacConkey Purple Broth, Deoxycholate Agar, Hektoen Agar





The use of *granulated* media significantly reduces the spread of powder (Figure 1: Weighing). The hazard of inhaling hazardous/toxic substances and developing allergic reactions is eliminated leading to a safer, cleaner working environment.

Figure 1: Weighing





## Clear production

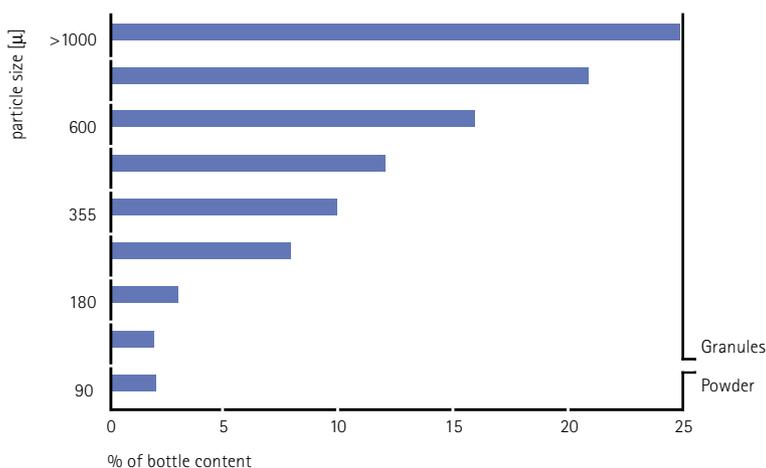
Merck's unique granulated media are produced with the same special technique that is also used in the production of granulated food or drugs.

Firstly, a homogeneous powdered culture medium is produced. But here, where other producers stop, Merck goes one step further. The powder is then pressed to small granules – under the avoidance of heat. The result are small particles with clear advantages in safety, handling and performance.

There is no separation of components or lumping even under warm or humid conditions prolonging the shelf life of the products.

Typically, a bottle of Merck's granulated media contains granules of different sizes as well as a small amount of powder (usually less than 10-15%) which is produced through physical rubbing of the granules against each other and the container wall (Figure 2: Particle size).

Figure 2: Particle size



## Clear performance

The granules ensure rapid and uniform dissolution in water. Unlike powder, no lumps are formed. As granulated media have better flow properties, the handling and weighing out is much easier as there is no sticking to the walls of vessels or apparatus.

In addition, granulated media offer a homogeneous distribution of the ingredients. This guarantees reproducible composition of the media even if only small amounts are used.

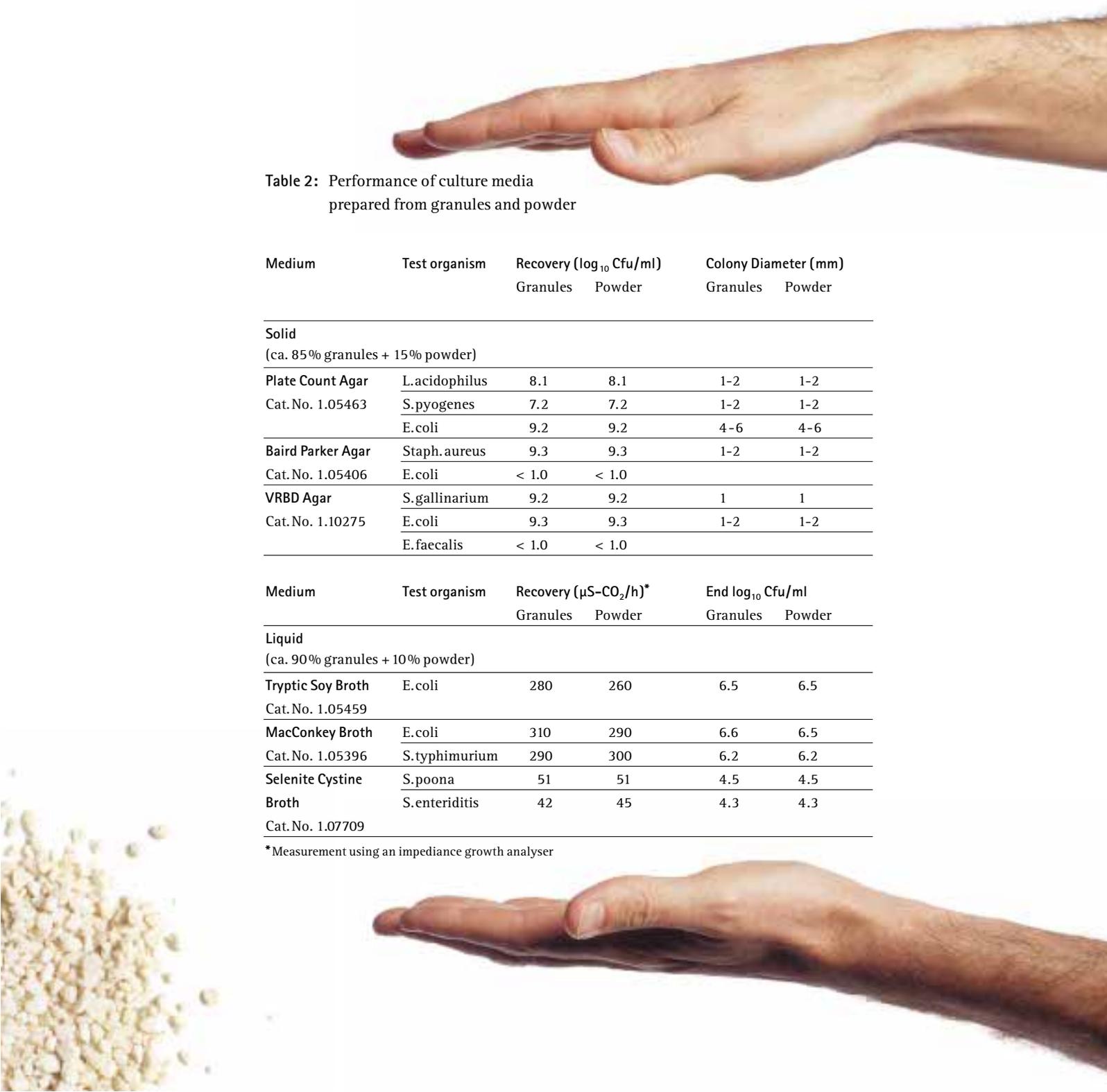
Composition and performance of granules and powder in a bottle of Merck's granulated media are identical, despite the variations in particle size. The growth characteristics are identical due to the homogeneity of the media (Table 2: Performance)

Granulated media combine safety and optimal performance and offer clear advantages.

**Table 2:** Performance of culture media prepared from granules and powder

Medium	Test organism	Recovery ( $\log_{10}$ CfU/ml)		Colony Diameter (mm)	
		Granules	Powder	Granules	Powder
<b>Solid</b> (ca. 85% granules + 15% powder)					
<b>Plate Count Agar</b>	<i>L. acidophilus</i>	8.1	8.1	1-2	1-2
Cat. No. 1.05463	<i>S. pyogenes</i>	7.2	7.2	1-2	1-2
	<i>E. coli</i>	9.2	9.2	4-6	4-6
<b>Baird Parker Agar</b>	<i>Staph. aureus</i>	9.3	9.3	1-2	1-2
Cat. No. 1.05406	<i>E. coli</i>	< 1.0	< 1.0		
	<i>S. gallinarium</i>	9.2	9.2	1	1
<b>VRBD Agar</b>	<i>E. coli</i>	9.3	9.3	1-2	1-2
Cat. No. 1.10275	<i>E. coli</i>	9.3	9.3	1-2	1-2
	<i>E. faecalis</i>	< 1.0	< 1.0		
<b>Liquid</b> (ca. 90% granules + 10% powder)					
<b>Tryptic Soy Broth</b>	<i>E. coli</i>	280	260	6.5	6.5
Cat. No. 1.05459					
<b>MacConkey Broth</b>	<i>E. coli</i>	310	290	6.6	6.5
Cat. No. 1.05396	<i>S. typhimurium</i>	290	300	6.2	6.2
	<i>S. poona</i>	51	51	4.5	4.5
<b>Selenite Cystine Broth</b>	<i>S. enteritidis</i>	42	45	4.3	4.3
Cat. No. 1.07709					

\*Measurement using an impedance growth analyser



## Clear advantages

- S**afer      Significant reduction of inhalation of hazardous / toxic substances resulting in fewer allergic responses.  
Less contamination of working tools and environment.
- A**ccurate      No separation of components and no lump formation even under humid or warm conditions.
- F**ast      Rapid and uniform dissolution in water.
- E**asier      Easier handling and weighing due to the better flow properties avoiding the sticking of powder to the flask or container.
- R**eliable      Homogenous distribution of ingredients guarantee high reproducibility even if only small amounts of media are used.

