

Pneumococcal Polysaccharides

Diseases caused by the bacterium *Streptococcus pneumoniae* are a major global health concern. Millions of people become infected with this pathogen each year, developing serious conditions such as pneumonia, meningitis, and otitis media. Currently, it is estimated that pneumococcal diseases result in the death of more than 1 million children under five years of age every year, primarily in developing countries. The severity of these pneumococcal diseases is primarily attributed to variations in the composition and structure of the capsular antigen.

To aid in the analysis and prevention of pneumococcal disease, ATCC offers 28 types of pneumococcal polysaccharides from various sources. They are the same serotypes found in current commercially available vaccines.

Each polysaccharide is extracted and purified separately, making the products specific and useful as antigens in:

- Direct enzyme-linked immunosorbent assays (ELISA)
- Epidemiological studies
- *In vitro* immunological research

ATCC pneumococcal polysaccharides are available in three package sizes and new lots will be provided with a Certificate of Analysis that will include identity by NMR, residual protein, antigenicity, and molecular weight (exclusive for Pfizer products).

TABLE 1. ATCC Pneumococcal Polysaccharides by USA and Danish Designations

Pneumococcal Type		Available Volumes (ATCC® No.)			Source	Corresponding Strains (ATCC® No.)	PMEN Strains (ATCC® No.)
USA Designation ¹	Danish Designation ²	2 mg	10 mg	200mg			
1	1	15-X	161-X	NA	Merck	6301™, 9163™, 33400™	BAA-1666™, BAA-1654™, BAA-1655™
		10-X	12-X	13-X	Pfizer		
2	2	16-X	165-X	168-X	Merck	6302™	
		500-X	501-X	502-X	Pfizer		
3	3	17-X	169-X	172-X	Merck	6303™, 10813™	BAA-1657™
		31-X	32-X	33-X	Pfizer		
4	4	18-X	173-X	176-X	Merck	6304™, BAA-334™*	BAA-1664™
		34-X	35-X	36-X	Pfizer		
5	5	57-X	177-X	180-X	Merck	6305™	BAA-341™
		37-X	38-X	41-X	Pfizer		
6	6A	14-X	271-X	280-X	Pfizer	6306™	BAA-659™, BAA-1667™
8	8	20-X	185-X	188-X	Merck	6308™	BAA-1659™
		503-X	504-X	505-X	Pfizer		
9	9N	21-X	189-X	192-X	Merck	6309™	
		506-X	507-X	508-X	Pfizer		
12	12F	22-X	NA	NA	Merck	6312™	BAA-1660™
		515-X	516-X	517-X	Pfizer		
14	14	23-X	197-X	200-X	Merck	6314™, 700672™	BAA-340™, BAA-1661™, BAA-1658™, 700677™, 700676™, 700902™
		73-X	74-X	81-X	Pfizer		

1. United States designations chronologically indicate the antigens in order of recognition. 2. The Danish designation uses an alphanumeric system to indicate any known cross-reactivity. The number refers to the sero-capsular antigen group, and the letter represents related serotypes that cannot be distinguished. * Bacterial genome is fully sequenced

Pneumococcal Type		Available Volumes (ATCC® No.)			Source	Corresponding Strains (ATCC® No.)	PMEN Strains (ATCC® No.)
USA Designation ¹	Danish Designation ²	2 mg	10 mg	200mg			
17	17F	63-X	201-X	204-X	Merck	6317™	
		521-X	522-X	523-X	Pfizer		
19	19F	84-X	99-X	101-X	Pfizer	6319™, 49619™	BAA-657™, 700905™*
22	22F	527-X	528-X	529-X	Pfizer	6322™	
23	23F	25-X	217-X	220-X	Merck	6323™	51916™, BAA-343™, 700906™, 700669™*, BAA-662™
		102-X	103-X	104-X	Pfizer		
25	25F	530-X	531-X	532-X	Pfizer	6325™, 12359™	
26	6B	58-X	225-X	228-X	Merck	6326™, BAA-612™	BAA-658™, 700670™, BAA-342™, 700675™, 700903™
		105-X	106-X	107-X	Pfizer		
30	15A	536-X	537-X	538-X	Pfizer		
34	10A	60-X	229-X	232-X	Merck	8334™	
		509-X	510-X	511-X	Pfizer		
43	11A	61-X	233-X	236-X	Merck	10343™	
		512-X	513-X	514-X	Pfizer		
51	7F	108-X	281-X	284-X	Pfizer	10351™	BAA-1665™
54	15B	62-X	241-X	244-X	Merck	10354™	BAA-1663™
		518-X	519-X	520-X	Pfizer		
56	18C	285-X	288-X	289-X	Pfizer	10356™	BAA-1662™
57	19A	64-X	249-X	252-X	Merck	10357™, BAA-475™	700674™, 700673™*, 700678™, 700904™
		301-X	302-X	304-X	Pfizer		
66	35B	539-X	540-X	541-X	Pfizer		
68	9V	305-X	325-X	331-X	Pfizer	10368™	700671™
70	33F	67-X	257-X	260-X	Merck	10370™	
		533-X	534-X	535-X	Pfizer		
71	38	542-X	543-X	544-X	Pfizer		

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Additional resources for pneumococcal polysaccharide research

The **Pneumococcal Molecular Epidemiology Network (PMEN)** provides detailed information on strains listed in the preceding table, including typing by Pulsed-field gel electrophoresis (PFGE), multilocus sequencing, and PBP fingerprinting. Data for strains analyzed by PMEN are available online at www.sph.emory.edu/PMEN.

The **NIST Chemistry WebBook** contains IR, mass, electronic/vibrational, and UV/VIS spectra as well as constants of diatomic molecules (spectroscopic data) and ion energetics data drawn from various evaluated sources. The WebBook is available online at www.webbook.nist.gov/chemistry.

The **Spectral Database System (SDBS)**, managed by the National Institute of Materials and Chemical Research in Japan, contains IR, 1H-NMR, 13C-NMR, mass, and ESR spectra of organics. The SDBS is available online at www.sdfs.riodb.aist.go.jp/sdfs/cgi-bin/direct_frame_top.cgi.

The **RCSB Protein Data Bank (PDB)** provides structural analysis and sequence data for *Streptococcus pneumoniae* proteins, including those related to ATCC® BAA-255™ (non-virulent) and ATCC® BAA-334™ (capsular serotype 4) fully genome sequenced strains. PDB is available online at www.rcsb.org/pdb.

See our online catalog at www.atcc.org/polysaccharides for a full description of each item.