

American National Standard for

Pumps – General Guidelines for Materials, Sound Testing, and Decontamination

Sponsor
Hydraulic Institute
www.Pumps.org

Approved September 28, 2021
Reaffirmed June 8, 2026
American National Standards Institute, Inc.

Contents

Page

Foreword	v
9 Pumps – general guidelines for materials, sound testing, and decontamination	1
9.0 Introduction	1
9.0.1 Purpose	1
9.0.2 Scope	1
9.0.3 Units, symbols, and subscripts	5
9.1 Materials	8
9.1.1 Introduction	8
9.1.2 Data on liquids	9
9.1.3 Factors affecting material selection	9
9.1.4 Positive displacement pumps – materials – general designations	16
9.1.5 Rotodynamic pumps – materials – general designation	18
9.1.6 Materials of construction	20
9.2 Measurement of airborne sound	33
9.2.1 Purpose	33
9.2.2 Introduction	33
9.2.3 Instrumentation	33
9.2.4 Operation of pumping equipment	34
9.2.5 Test environment	34
9.2.6 Microphone locations	34
9.2.7 Measurement technique	44
9.2.8 Measurements to be taken	44
9.2.9 Calculation and interpretation of readings	45
9.2.10 Presentation of data	46
9.3 Decontamination of returned products procedure	46
9.4 Intentionally left blank	48
9.5 Intentionally left blank	48
Appendix A Bibliography	49
Appendix B Airborne sound pressure level test report (informative)	51
Figures	
9.0.a – Rotodynamic pump types	1
9.0.b — Rotodynamic pump types – overhung impeller	1
9.0.c — Rotodynamic pump types – between bearing	2
9.0.d — Rotodynamic pump types – vertically suspended	2
9.0.e — Rotodynamic pump types – regenerative turbine	3
9.0.f — Rotodynamic pump types – circulator pump	3
9.0.g — Rotary pump types	3
9.0.h — Rotodynamic pump types – sealless	4
9.0.i — Reciprocating power pump types	4
9.0.j — Direct acting (steam) pump types	4

9.0.k — Rotodynamic slurry pump types	5
9.1.3.5.1 — Galvanic series of metals and alloys beginning with the corroded end (anodic, or least noble)	12
9.1.6.19 — General ranking of cavitation erosion resistance of common cast metals.	31
9.1.6.19.3 — General hardness of common overlay materials	32
9.2.6a — Horizontal end suction centrifugal pump	35
9.2.6b — Horizontally split rotodynamic pump.	36
9.2.6c — Vertical in-line centrifugal pump	37
9.2.6d — Double case BB5 pump	38
9.2.6e — Horizontally split multistage rotodynamic pump	39
9.2.6f — Horizontal reciprocating pump.	39
9.2.6g — Vertical reciprocating pump	40
9.2.6i — Horizontal rotary screw pump	41
9.2.6h — Horizontal rotary gear pump.	41
9.2.6j — Vertical rotary pump	42
9.2.6k — VS1-VS7 pumps	43
9.2.6l — VS8 pump	43

Tables

9.0.3 — Preferred measurement units and conversion factors	5
9.1.3.7 — Relative ranking of adhesive wear resistance of wrought materials	14
9.1.6.19 — Comparison of hard-facing application methods	32
9.2.9.1 — Corrections for background noise	45