

DIN EN 997:2018-12 (E)

WC pans and WC suites with integral trap

Contents		Page
	European foreword	5
1	Scope	6
2	Normative references	6
3	Terms and definitions	6
4	Classification	11
5	Functional characteristics and test methods for type 1 products	11
5.1	Depth of water seal	11
5.2	Flushing characteristics	11
5.2.1	General	11
5.2.2	Wash of bowl	11
5.2.3	Flushing of toilet paper	12
5.2.4	Flushing of fifty small plastic balls	12
5.2.5	Oversplashing	12
5.2.6	After-flush volume	12
5.3	Water absorption	12
5.4	Static load	12
5.5	Additional characteristics of flushing cisterns for close-coupled suites and one-piece WCs	12
5.5.1	General	12
5.5.2	Inlet valve of the flushing cistern	12
5.5.3	Supply piping	12
5.5.4	Flush volume(s) of the flushing cistern	13
5.5.5	Leak-tightness between flushing cistern and bowl	13
5.5.6	Outlet valve leak-tightness	13
5.5.7	Outlet valve reliability	13
5.5.8	Overflow	13
5.5.9	Safety margin - dimension "c"	14
5.5.10	Safety margin - dimension "a"	15
5.6	Durability	15
5.7	Test methods	15
5.7.1	Depth of water seal	15
5.7.2	Flushing tests	15
5.7.3	Determination of water absorption	18
5.7.4	Load test	19
5.7.5	Tests for flushing cisterns of close-coupled suites and one-piece WCs	20
5.8	Sub-types of independent WC pans, close-coupled suites and one-piece WCs	23
5.8.1	Nominal flush volume	23
5.8.2	Flushing devices	23
5.8.3	Verification of sub-types	24
6	Functional characteristics and test methods for type 2 products	24
6.1	Inlet valve	24
6.2	Backflow prevention	24
6.3	Marking of flushing cistern	24
6.4	Warning pipe and overflow provision	24
6.5	Flush volume	25
6.5.1	Full flush	25

6.5.2	Reduced flush	25
6.6	Flush rate	25
6.7	Physical endurance and leakage of flushing device	25
6.8	Chemical endurance of flushing device	25
6.9	Solids discharge and after-flush volume for maximum flush	25
6.10	Paper discharge for reduced-flush volume	25
6.11	Liquid contaminant dye retention	25
6.12	Wash of bowl	26
6.13	Depth of water seal	26
6.14	Static load of type 2 products	26
6.15	Water absorption	26
6.16	Durability of type 2 products	26
6.17	Test methods	26
6.17.1	Inlet valve tests	26
6.17.2	Warning pipe and overflow provisions	26
6.17.3	Flush volume and water trap seal tests	27
6.17.4	Flush rate test	27
6.17.5	Physical endurance and leakage test of flushing device	29
6.17.6	Chemical endurance test of flushing device	30
6.17.7	Solids discharge and after-flush volume for maximum flush volume test	30
6.17.8	Paper discharge for reduced-flush volume test	31
6.17.9	Liquid contaminant dye retention test	32
6.17.10	Wash of bowl	33
6.17.11	Summary of requirements for compatibility testing of type 2 products	33
7	Dangerous substances	34
8	Marking	34
9	Assessment and verification of constancy of performance - AVCP	37
9.1	General	37
9.2	Type testing	37
9.2.1	General	37
9.2.2	Test samples, testing and compliance criteria	38
9.3	Factory production control (FPC)	39
9.3.1	General	39
9.3.2	Equipment	40
9.3.3	Raw materials and components	40
9.3.4	Product testing and assessment	40
9.3.5	Non-complying products	40
9.3.6	Corrective action	40
Annex A (normative) Valve-type test flushing cistern		41
A.1	Valve-type test flushing cistern (Figures A.1 to A.3)	41
A.2	Calibration of the valve-type test flushing cistern	43
A.3	Procedure to test the flush rate of the test flushing cistern	43
A.4	Procedure to test the flushing requirements of the WC	44
A.5	Procedure to measure the impact force of the test flushing cistern	44
A.5.1	General	44
A.5.2	Test device	44
A.5.3	Procedure for calibrating the load cell unit and the measurement amplifier	46
A.5.4	Measurement procedure	46
A.5.5	Calculation procedure for fixed time frame 0,35 s to 0,5 s	47
A.5.6	Calculation procedure for maximum impact force	47
Annex B (normative) Test rig for test pressure flush valve		48
B.1	Test rig (Figure B.1)	48
B.2	Procedure to measure the impact force	49
Annex C (normative) Test rig for after-flush volume test		51

C.1	Test rig for after-flush volume test for independent WC pans (Figures C.1 and C.2)	51
C.2	Test rig for after-flush volume test for one-piece WC pans, close-coupled suites and WC suites (Figure C.3)	52
Annex D (normative)	Basket method	53
Annex E (normative)	Preparation of test specimens	54
Annex F (normative)	Examples of flush pipes and outlet valves for test flushing cisterns	57
Annex ZA (informative)	Relationship of this European Standard with Regulation (EU) No.305/2011 ..	61
Bibliography	64