



Germanischer Lloyd

TO WHOM IT MAY CONCERN

Hamburg, 2008-11-27

MARPOL 73/78 Annex IV, Discharge rate of untreated sewage

On 1st December 2008 the Resolution MEPC.164(56) comes into force. According to MARPOL 73/78 Annex IV a moderate rate of discharge applies to the discharge of untreated sewage stored in holding tanks.

This Resolution applies to the following vessels:

- vessels of 400 gross tonnage and more
- vessels of less than 400 gross tonnage which are certified to carry more than 15 persons

fitted with a sewage holding tank for untreated sewage.

Resolution MEPC.157(55) provides a guideline on how to calculate the moderate rate of discharge. In Resolution MEPC.164(56) Regulation 11.1.1 of MARPOL 73/78 Annex IV has been updated to require that this moderate rate of discharge is to be calculated in accordance with MEPC.157(55). The results of these calculations shall be approved by the Administration and be placed onboard.

The maximum permissible discharge rate is 1/200,000 of swept volume as follows:

$$DR_{\max} = 0.00926 V D B$$

Where:

DR_{\max}	maximum permissible discharge rate (m ³ /h)
V	ship's average speed (knots) over the period
D	Draft (m)
B	Breadth (m)

The results of the calculation should be worked out as table covering all relevant combinations of draft and speed (see attached sheets).

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Gerichtsstand und Erfüllungsort ist Hamburg. Es gelten die Allgemeinen Geschäftsbedingungen des Germanischen Lloyd in ihrer jeweils neuesten Fassung. Es gilt deutsches Recht.

Place of performance and jurisdiction is Hamburg. The latest edition of the General Terms and Conditions of Germanischer Lloyd is applicable. German law applies.

Please find attached sheets covering various drafts, breadths and speeds.

By using the attached tables as described above compliance with MEPC.157(55) and MEPC.165(56) will be facilitated.

Our surveyors can endorse the printed out sheet free of charge for your vessel during the next visits, if requested.

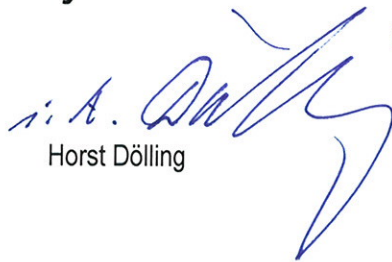
You are also free to send us your own calculation sheets for approval to GL-HO. Kindly be informed that we charge these approvals.

Yours faithfully,

Germanischer Lloyd



Christian Mains



Horst Dölling

How to use these tables

The tables are covering the breadths from 10m - 50m, drafts from 1m up to 23m and a speed range from 4kt to 32kt. To use these tables you just need to know the summer-draft and the breadth of your vessel.

1.

Dependig on the breadth of your ship please choose the table (Page 2-10) with the respective range.

2.

Print out the relevant table, fill in the vessel identification data and forward them on to the vessel to be kept on board.

3.

Two diagramms (Page 11+ 12) are added to get quick information about the minimum / maximum discharge rates depending on the different breadths.

4.

Please be informed that we have chosen the conservative discharge rates to ensure an environment friendly discharging. Therefore it will appear that discharge rates, calculated by yourself, differ from the shown rates.

5.

In (the most) case(s) the discharge pump does not allow to adjust the rate, in this case it is helpful to determine the minimum speed (in knots) that allows the discharge with a moderate rate.



GL

Discharge rates (m³/h) of untreated sewage in accordance with MEPC. 157(55)

specified by GL

Vessels breadth [B]: from 10,00 m ≤ B < 15,00 m

Average discharge per 24 hour period 0,37 m³/h at a min. speed of 4 knots with a Draft of 1,00 m

Average discharge per 24 hour period 49,26 m³/h at a speed of 32 knots with a Draft of 19,00 m

Speed V [in kt]	4≤V<6	6≤V<8	8≤V<10	10≤V<12	12≤V<14	14≤V<16	16≤V<18	18≤V<20	20≤V<22	22≤V<24	24≤V<26	26≤V<28	28≤V<32
≤ 1,00 m	0,37	0,56	0,74	0,93	1,11	1,30	1,48	1,67	1,85	2,04	2,22	2,41	2,59
≤ 2,00 m	0,74	1,11	1,48	1,85	2,22	2,59	2,96	3,33	3,70	4,07	4,44	4,82	5,19
≤ 3,00 m	1,11	1,67	2,22	2,78	3,33	3,89	4,44	5,00	5,56	6,11	6,67	7,22	7,78
≤ 4,00 m	1,48	2,22	2,96	3,70	4,44	5,19	5,93	6,67	7,41	8,15	8,89	9,63	10,37
≤ 5,00 m	1,85	2,78	3,70	4,63	5,56	6,48	7,41	8,33	9,26	10,19	11,11	12,04	12,96
≤ 6,00 m	2,22	3,33	4,44	5,56	6,67	7,78	8,89	10,00	11,11	12,22	13,33	14,45	15,56
≤ 7,00 m	2,59	3,89	5,19	6,48	7,78	9,07	10,37	11,67	12,96	14,26	15,56	16,85	18,15
≤ 8,00 m	2,96	4,44	5,93	7,41	8,89	10,37	11,85	13,33	14,82	16,30	17,78	19,26	20,74
≤ 9,00 m	3,33	5,00	6,67	8,33	10,00	11,67	13,33	15,00	16,67	18,33	20,00	21,67	23,34
≤ 10,00 m	3,70	5,56	7,41	9,26	11,11	12,96	14,82	16,67	18,52	20,37	22,22	24,08	25,93
≤ 11,00 m	4,07	6,11	8,15	10,19	12,22	14,26	16,30	18,33	20,37	22,41	24,45	26,48	28,52
≤ 12,00 m	4,44	6,67	8,89	11,11	13,33	15,56	17,78	20,00	22,22	24,45	26,67	28,89	31,11
≤ 13,00 m	4,82	7,22	9,63	12,04	14,45	16,85	19,26	21,67	24,08	26,48	28,89	31,30	33,71
≤ 14,00 m	5,19	7,78	10,37	12,96	15,56	18,15	20,74	23,34	25,93	28,52	31,11	33,71	36,30
≤ 15,00 m	5,56	8,33	11,11	13,89	16,67	19,45	22,22	25,00	27,78	30,56	33,34	36,11	38,89
≤ 16,00 m	5,93	8,89	11,85	14,82	17,78	20,74	23,71	26,67	29,63	32,60	35,56	38,52	41,48
≤ 17,00 m	6,30	9,45	12,59	15,74	18,89	22,04	25,19	28,34	31,48	34,63	37,78	40,93	44,08
≤ 18,00 m	6,67	10,00	13,33	16,67	20,00	23,34	26,67	30,00	33,34	36,67	40,00	43,34	46,67
≤ 19,00 m	7,04	10,56	14,08	17,59	21,11	24,63	28,15	31,67	35,19	38,71	42,23	45,74	49,26

The discharge rate is calculated over an average rate for 24 hours. If measured at a hourly basis this rate may be exceeded up to max. 20%.



GL

Discharge rates (m³/h) of untreated sewage in accordance with MEPC. 157(55)

specified by GL

Vessels breadth [B]: from 15,00 m ≤ B < 20,00 m

Average discharge per 24 hour period 0,56 m³/h at a min. speed of 4 knots with a Draft of 1,00 m

Average discharge per 24 hour period 73,89 m³/h at a speed of 32 knots with a Draft of 19,00 m

Speed V [in kt]	4≤V<6	6≤V<8	8≤V<10	10≤V<12	12≤V<14	14≤V<16	16≤V<18	18≤V<20	20≤V<22	22≤V<24	24≤V<26	26≤V<28	28≤V<32
≤ 1,00 m	0,56	0,83	1,11	1,39	1,67	1,94	2,22	2,50	2,78	3,06	3,33	3,61	3,89
≤ 2,00 m	1,11	1,67	2,22	2,78	3,33	3,89	4,44	5,00	5,56	6,11	6,67	7,22	7,78
≤ 3,00 m	1,67	2,50	3,33	4,17	5,00	5,83	6,67	7,50	8,33	9,17	10,00	10,83	11,67
≤ 4,00 m	2,22	3,33	4,44	5,56	6,67	7,78	8,89	10,00	11,11	12,22	13,33	14,45	15,56
≤ 5,00 m	2,78	4,17	5,56	6,95	8,33	9,72	11,11	12,50	13,89	15,28	16,67	18,06	19,45
≤ 6,00 m	3,33	5,00	6,67	8,33	10,00	11,67	13,33	15,00	16,67	18,33	20,00	21,67	23,34
≤ 7,00 m	3,89	5,83	7,78	9,72	11,67	13,61	15,56	17,50	19,45	21,39	23,34	25,28	27,22
≤ 8,00 m	4,44	6,67	8,89	11,11	13,33	15,56	17,78	20,00	22,22	24,45	26,67	28,89	31,11
≤ 9,00 m	5,00	7,50	10,00	12,50	15,00	17,50	20,00	22,50	25,00	27,50	30,00	32,50	35,00
≤ 10,00 m	5,56	8,33	11,11	13,89	16,67	19,45	22,22	25,00	27,78	30,56	33,34	36,11	38,89
≤ 11,00 m	6,11	9,17	12,22	15,28	18,33	21,39	24,45	27,50	30,56	33,61	36,67	39,73	42,78
≤ 12,00 m	6,67	10,00	13,33	16,67	20,00	23,34	26,67	30,00	33,34	36,67	40,00	43,34	46,67
≤ 13,00 m	7,22	10,83	14,45	18,06	21,67	25,28	28,89	32,50	36,11	39,73	43,34	46,95	50,56
≤ 14,00 m	7,78	11,67	15,56	19,45	23,34	27,22	31,11	35,00	38,89	42,78	46,67	50,56	54,45
≤ 15,00 m	8,33	12,50	16,67	20,84	25,00	29,17	33,34	37,50	41,67	45,84	50,00	54,17	58,34
≤ 16,00 m	8,89	13,33	17,78	22,22	26,67	31,11	35,56	40,00	44,45	48,89	53,34	57,78	62,23
≤ 17,00 m	9,45	14,17	18,89	23,61	28,34	33,06	37,78	42,50	47,23	51,95	56,67	61,39	66,12
≤ 18,00 m	10,00	15,00	20,00	25,00	30,00	35,00	40,00	45,00	50,00	55,00	60,00	65,01	70,01
≤ 19,00 m	10,56	15,83	21,11	26,39	31,67	36,95	42,23	47,50	52,78	58,06	63,34	68,62	73,89



GL

Discharge rates (m³/h) of untreated sewage in accordance with MEPC.157(55), specified by GL

Vessels breadth [B]: from 20,00 m ≤ B < 25,00 m

Average discharge per 24 hour period 1,48 m³/h at a min. speed of 4 knots with a Draft of 2,00 m

Average discharge per 24 hour period 103,71 m³/h at a speed of 32 knots with a Draft of 20,00 m

Speed V [in kt]	4 ≤ V < 6	6 ≤ V < 8	8 ≤ V < 10	10 ≤ V < 12	12 ≤ V < 14	14 ≤ V < 16	16 ≤ V < 18	18 ≤ V < 20	20 ≤ V < 22	22 ≤ V < 24	24 ≤ V < 26	26 ≤ V < 28	28 ≤ V < 32
Draft													
≤ 2,00 m	1,48	2,22	2,96	3,70	4,44	5,19	5,93	6,67	7,41	8,15	8,89	9,63	10,37
≤ 3,00 m	2,22	3,33	4,44	5,56	6,67	7,78	8,89	10,00	11,11	12,22	13,33	14,45	15,56
≤ 4,00 m	2,96	4,44	5,93	7,41	8,89	10,37	11,85	13,33	14,82	16,30	17,78	19,26	20,74
≤ 5,00 m	3,70	5,56	7,41	9,26	11,11	12,96	14,82	16,67	18,52	20,37	22,22	24,08	25,93
≤ 6,00 m	4,44	6,67	8,89	11,11	13,33	15,56	17,78	20,00	22,22	24,45	26,67	28,89	31,11
≤ 7,00 m	5,19	7,78	10,37	12,96	15,56	18,15	20,74	23,34	25,93	28,52	31,11	33,71	36,30
≤ 8,00 m	5,93	8,89	11,85	14,82	17,78	20,74	23,71	26,67	29,63	32,60	35,56	38,52	41,48
≤ 9,00 m	6,67	10,00	13,33	16,67	20,00	23,34	26,67	30,00	33,34	36,67	40,00	43,34	46,67
≤ 10,00 m	7,41	11,11	14,82	18,52	22,22	25,93	29,63	33,34	37,04	40,74	44,45	48,15	51,86
≤ 11,00 m	8,15	12,22	16,30	20,37	24,45	28,52	32,60	36,67	40,74	44,82	48,89	52,97	57,04
≤ 12,00 m	8,89	13,33	17,78	22,22	26,67	31,11	35,56	40,00	44,45	48,89	53,34	57,78	62,23
≤ 13,00 m	9,63	14,45	19,26	24,08	28,89	33,71	38,52	43,34	48,15	52,97	57,78	62,60	67,41
≤ 14,00 m	10,37	15,56	20,74	25,93	31,11	36,30	41,48	46,67	51,86	57,04	62,23	67,41	72,60
≤ 15,00 m	11,11	16,67	22,22	27,78	33,34	38,89	44,45	50,00	55,56	61,12	66,67	72,23	77,78
≤ 16,00 m	11,85	17,78	23,71	29,63	35,56	41,48	47,41	53,34	59,26	65,19	71,12	77,04	82,97
≤ 17,00 m	12,59	18,89	25,19	31,48	37,78	44,08	50,37	56,67	62,97	69,26	75,56	81,86	88,16
≤ 18,00 m	13,33	20,00	26,67	33,34	40,00	46,67	53,34	60,00	66,67	73,34	80,01	86,67	93,34
≤ 19,00 m	14,08	21,11	28,15	35,19	42,23	49,26	56,30	63,34	70,38	77,41	84,45	91,49	98,53
≤ 20,00 m	14,82	22,22	29,63	37,04	44,45	51,86	59,26	66,67	74,08	81,49	88,90	96,30	103,71



GL

Discharge rates (m³/h) of untreated sewage in accordance with MEPC. 157(55), specified by GL

Vessels breadth [B]: from **25,00 m** ≤ B < **30,00 m**

Average discharge per 24 hour period **1,85 m³/h** at a min. speed of **4** knots with a Draft of **2,00 m**

Average discharge per 24 hour period **129,64 m³/h** at a speed of **32** knots with a Draft of **20,00 m**

Speed V [in kt]	4≤V<6	6≤V<8	8≤V<10	10≤V<12	12≤V<14	14≤V<16	16≤V<18	18≤V<20	20≤V<22	22≤V<24	24≤V<26	26≤V<28	28≤V<32
Draft													
≤ 2,00 m	1,85	2,78	3,70	4,63	5,56	6,48	7,41	8,33	9,26	10,19	11,11	12,04	12,96
≤ 3,00 m	2,78	4,17	5,56	6,95	8,33	9,72	11,11	12,50	13,89	15,28	16,67	18,06	19,45
≤ 4,00 m	3,70	5,56	7,41	9,26	11,11	12,96	14,82	16,67	18,52	20,37	22,22	24,08	25,93
≤ 5,00 m	4,63	6,95	9,26	11,58	13,89	16,21	18,52	20,84	23,15	25,47	27,78	30,10	32,41
≤ 6,00 m	5,56	8,33	11,11	13,89	16,67	19,45	22,22	25,00	27,78	30,56	33,34	36,11	38,89
≤ 7,00 m	6,48	9,72	12,96	16,21	19,45	22,69	25,93	29,17	32,41	35,65	38,89	42,13	45,37
≤ 8,00 m	7,41	11,11	14,82	18,52	22,22	25,93	29,63	33,34	37,04	40,74	44,45	48,15	51,86
≤ 9,00 m	8,33	12,50	16,67	20,84	25,00	29,17	33,34	37,50	41,67	45,84	50,00	54,17	58,34
≤ 10,00 m	9,26	13,89	18,52	23,15	27,78	32,41	37,04	41,67	46,30	50,93	55,56	60,19	64,82
≤ 11,00 m	10,19	15,28	20,37	25,47	30,56	35,65	40,74	45,84	50,93	56,02	61,12	66,21	71,30
≤ 12,00 m	11,11	16,67	22,22	27,78	33,34	38,89	44,45	50,00	55,56	61,12	66,67	72,23	77,78
≤ 13,00 m	12,04	18,06	24,08	30,10	36,11	42,13	48,15	54,17	60,19	66,21	72,23	78,25	84,27
≤ 14,00 m	12,96	19,45	25,93	32,41	38,89	45,37	51,86	58,34	64,82	71,30	77,78	84,27	90,75
≤ 15,00 m	13,89	20,84	27,78	34,73	41,67	48,62	55,56	62,51	69,45	76,40	83,34	90,29	97,23
≤ 16,00 m	14,82	22,22	29,63	37,04	44,45	51,86	59,26	66,67	74,08	81,49	88,90	96,30	103,71
≤ 17,00 m	15,74	23,61	31,48	39,36	47,23	55,10	62,97	70,84	78,71	86,58	94,45	102,32	110,19
≤ 18,00 m	16,67	25,00	33,34	41,67	50,00	58,34	66,67	75,01	83,34	91,67	100,01	108,34	116,68
≤ 19,00 m	17,59	26,39	35,19	43,99	52,78	61,58	70,38	79,17	87,97	96,77	105,56	114,36	123,16
≤ 20,00 m	18,52	27,78	37,04	46,30	55,56	64,82	74,08	83,34	92,60	101,86	111,12	120,38	129,64



GL

Discharge rates (m³/h) of untreated sewage in accordance with MEPC. 157(55)

specified by GL

Vessels breadth [B]: from **30,00 m** ≤ B < **35,00 m**

Average discharge per 24 hour period **3,33 m³/h** at a min. speed of **4** knots with a Draft of **3,00 m**

Average discharge per 24 hour period **163,35 m³/h** at a speed of **32** knots with a Draft of **21,00 m**

Speed V [in kt]	4≤V<6	6≤V<8	8≤V<10	10≤V<12	12≤V<14	14≤V<16	16≤V<18	18≤V<20	20≤V<22	22≤V<24	24≤V<26	26≤V<28	28≤V<32
Draft													
≤ 3,00 m	3,33	5,00	6,67	8,33	10,00	11,67	13,33	15,00	16,67	18,33	20,00	21,67	23,34
≤ 4,00 m	4,44	6,67	8,89	11,11	13,33	15,56	17,78	20,00	22,22	24,45	26,67	28,89	31,11
≤ 5,00 m	5,56	8,33	11,11	13,89	16,67	19,45	22,22	25,00	27,78	30,56	33,34	36,11	38,89
≤ 6,00 m	6,67	10,00	13,33	16,67	20,00	23,34	26,67	30,00	33,34	36,67	40,00	43,34	46,67
≤ 7,00 m	7,78	11,67	15,56	19,45	23,34	27,22	31,11	35,00	38,89	42,78	46,67	50,56	54,45
≤ 8,00 m	8,89	13,33	17,78	22,22	26,67	31,11	35,56	40,00	44,45	48,89	53,34	57,78	62,23
≤ 9,00 m	10,00	15,00	20,00	25,00	30,00	35,00	40,00	45,00	50,00	55,00	60,00	65,01	70,01
≤ 10,00 m	11,11	16,67	22,22	27,78	33,34	38,89	44,45	50,00	55,56	61,12	66,67	72,23	77,78
≤ 11,00 m	12,22	18,33	24,45	30,56	36,67	42,78	48,89	55,00	61,12	67,23	73,34	79,45	85,56
≤ 12,00 m	13,33	20,00	26,67	33,34	40,00	46,67	53,34	60,00	66,67	73,34	80,01	86,67	93,34
≤ 13,00 m	14,45	21,67	28,89	36,11	43,34	50,56	57,78	65,01	72,23	79,45	86,67	93,90	101,12
≤ 14,00 m	15,56	23,34	31,11	38,89	46,67	54,45	62,23	70,01	77,78	85,56	93,34	101,12	108,90
≤ 15,00 m	16,67	25,00	33,34	41,67	50,00	58,34	66,67	75,01	83,34	91,67	100,01	108,34	116,68
≤ 16,00 m	17,78	26,67	35,56	44,45	53,34	62,23	71,12	80,01	88,90	97,79	106,68	115,56	124,45
≤ 17,00 m	18,89	28,34	37,78	47,23	56,67	66,12	75,56	85,01	94,45	103,90	113,34	122,79	132,23
≤ 18,00 m	20,00	30,00	40,00	50,00	60,00	70,01	80,01	90,01	100,01	110,01	120,01	130,01	140,01
≤ 19,00 m	21,11	31,67	42,23	52,78	63,34	73,89	84,45	95,01	105,56	116,12	126,68	137,23	147,79
≤ 20,00 m	22,22	33,34	44,45	55,56	66,67	77,78	88,90	100,01	111,12	122,23	133,34	144,46	155,57
≤ 21,00 m	23,34	35,00	46,67	58,34	70,01	81,67	93,34	105,01	116,68	128,34	140,01	151,68	163,35



GL

Discharge rates (m³/h) of untreated sewage in accordance with MEPC. 157(55), specified by GL

Vessels breadth [B]: from **35,00 m** ≤ B < **40,00 m**

Average discharge per 24 hour period **3,89 m³/h** at a min. speed of **4** knots with a Draft of **3,00 m**

Average discharge per 24 hour period **190,57 m³/h** at a speed of **32** knots with a Draft of **21,00 m**

Speed V [in kt]	4≤V<6	6≤V<8	8≤V<10	10≤V<12	12≤V<14	14≤V<16	16≤V<18	18≤V<20	20≤V<22	22≤V<24	24≤V<26	26≤V<28	28≤V<32
Draft													
≤ 3,00 m	3,89	5,83	7,78	9,72	11,67	13,61	15,56	17,50	19,45	21,39	23,34	25,28	27,22
≤ 4,00 m	5,19	7,78	10,37	12,96	15,56	18,15	20,74	23,34	25,93	28,52	31,11	33,71	36,30
≤ 5,00 m	6,48	9,72	12,96	16,21	19,45	22,69	25,93	29,17	32,41	35,65	38,89	42,13	45,37
≤ 6,00 m	7,78	11,67	15,56	19,45	23,34	27,22	31,11	35,00	38,89	42,78	46,67	50,56	54,45
≤ 7,00 m	9,07	13,61	18,15	22,69	27,22	31,76	36,30	40,84	45,37	49,91	54,45	58,99	63,52
≤ 8,00 m	10,37	15,56	20,74	25,93	31,11	36,30	41,48	46,67	51,86	57,04	62,23	67,41	72,60
≤ 9,00 m	11,67	17,50	23,34	29,17	35,00	40,84	46,67	52,50	58,34	64,17	70,01	75,84	81,67
≤ 10,00 m	12,96	19,45	25,93	32,41	38,89	45,37	51,86	58,34	64,82	71,30	77,78	84,27	90,75
≤ 11,00 m	14,26	21,39	28,52	35,65	42,78	49,91	57,04	64,17	71,30	78,43	85,56	92,69	99,82
≤ 12,00 m	15,56	23,34	31,11	38,89	46,67	54,45	62,23	70,01	77,78	85,56	93,34	101,12	108,90
≤ 13,00 m	16,85	25,28	33,71	42,13	50,56	58,99	67,41	75,84	84,27	92,69	101,12	109,55	117,97
≤ 14,00 m	18,15	27,22	36,30	45,37	54,45	63,52	72,60	81,67	90,75	99,82	108,90	117,97	127,05
≤ 15,00 m	19,45	29,17	38,89	48,62	58,34	68,06	77,78	87,51	97,23	106,95	116,68	126,40	136,12
≤ 16,00 m	20,74	31,11	41,48	51,86	62,23	72,60	82,97	93,34	103,71	114,08	124,45	134,83	145,20
≤ 17,00 m	22,04	33,06	44,08	55,10	66,12	77,14	88,16	99,17	110,19	121,21	132,23	143,25	154,27
≤ 18,00 m	23,34	35,00	46,67	58,34	70,01	81,67	93,34	105,01	116,68	128,34	140,01	151,68	163,35
≤ 19,00 m	24,63	36,95	49,26	61,58	73,89	86,21	98,53	110,84	123,16	135,47	147,79	160,11	172,42
≤ 20,00 m	25,93	38,89	51,86	64,82	77,78	90,75	103,71	116,68	129,64	142,60	155,57	168,53	181,50
≤ 21,00 m	27,22	40,84	54,45	68,06	81,67	95,29	108,90	122,51	136,12	149,73	163,35	176,96	190,57



GL

Discharge rates (m³/h) of untreated sewage in accordance with MEPC. 157(55)

specified by GL

Vessels breadth [B]: from 40,00 m ≤ B < 45,00 m

Average discharge per 24 hour period 5,93 m³/h at a min. speed of 4 knots with a Draft of 4,00 m

Average discharge per 24 hour period 228,17 m³/h at a speed of 32 knots with a Draft of 22,00 m

Speed V [in kt]	4 ≤ V < 6	6 ≤ V < 8	8 ≤ V < 10	10 ≤ V < 12	12 ≤ V < 14	14 ≤ V < 16	16 ≤ V < 18	18 ≤ V < 20	20 ≤ V < 22	22 ≤ V < 24	24 ≤ V < 26	26 ≤ V < 28	28 ≤ V < 32
Draft													
≤ 4,00 m	5,93	8,89	11,85	14,82	17,78	20,74	23,71	26,67	29,63	32,60	35,56	38,52	41,48
≤ 5,00 m	7,41	11,11	14,82	18,52	22,22	25,93	29,63	33,34	37,04	40,74	44,45	48,15	51,86
≤ 6,00 m	8,89	13,33	17,78	22,22	26,67	31,11	35,56	40,00	44,45	48,89	53,34	57,78	62,23
≤ 7,00 m	10,37	15,56	20,74	25,93	31,11	36,30	41,48	46,67	51,86	57,04	62,23	67,41	72,60
≤ 8,00 m	11,85	17,78	23,71	29,63	35,56	41,48	47,41	53,34	59,26	65,19	71,12	77,04	82,97
≤ 9,00 m	13,33	20,00	26,67	33,34	40,00	46,67	53,34	60,00	66,67	73,34	80,01	86,67	93,34
≤ 10,00 m	14,82	22,22	29,63	37,04	44,45	51,86	59,26	66,67	74,08	81,49	88,90	96,30	103,71
≤ 11,00 m	16,30	24,45	32,60	40,74	48,89	57,04	65,19	73,34	81,49	89,64	97,79	105,93	114,08
≤ 12,00 m	17,78	26,67	35,56	44,45	53,34	62,23	71,12	80,01	88,90	97,79	106,68	115,56	124,45
≤ 13,00 m	19,26	28,89	38,52	48,15	57,78	67,41	77,04	86,67	96,30	105,93	115,56	125,20	134,83
≤ 14,00 m	20,74	31,11	41,48	51,86	62,23	72,60	82,97	93,34	103,71	114,08	124,45	134,83	145,20
≤ 15,00 m	22,22	33,34	44,45	55,56	66,67	77,78	88,90	100,01	111,12	122,23	133,34	144,46	155,57
≤ 16,00 m	23,71	35,56	47,41	59,26	71,12	82,97	94,82	106,68	118,53	130,38	142,23	154,09	165,94
≤ 17,00 m	25,19	37,78	50,37	62,97	75,56	88,16	100,75	113,34	125,94	138,53	151,12	163,72	176,31
≤ 18,00 m	26,67	40,00	53,34	66,67	80,01	93,34	106,68	120,01	133,34	146,68	160,01	173,35	186,68
≤ 19,00 m	28,15	42,23	56,30	70,38	84,45	98,53	112,60	126,68	140,75	154,83	168,90	182,98	197,05
≤ 20,00 m	29,63	44,45	59,26	74,08	88,90	103,71	118,53	133,34	148,16	162,98	177,79	192,61	207,42
≤ 21,00 m	31,11	46,67	62,23	77,78	93,34	108,90	124,45	140,01	155,57	171,12	186,68	202,24	217,80
≤ 22,00 m	32,60	48,89	65,19	81,49	97,79	114,08	130,38	146,68	162,98	179,27	195,57	211,87	228,17



GL

Discharge rates (m³/h) of untreated sewage in accordance with MEPC. 157(55) specified by GL

Vessels breadth [B]: from 45,00 m ≤ B < 50,00 m

Average discharge per 24 hour period 6,67 m³/h at a min. speed of 4 knots with a Draft of 4,00 m

Average discharge per 24 hour period 256,69 m³/h at a speed of 32 knots with a Draft of 22,00 m

Speed V [in kt]	4 ≤ V < 6	6 ≤ V < 8	8 ≤ V < 10	10 ≤ V < 12	12 ≤ V < 14	14 ≤ V < 16	16 ≤ V < 18	18 ≤ V < 20	20 ≤ V < 22	22 ≤ V < 24	24 ≤ V < 26	26 ≤ V < 28	28 ≤ V < 32
Draft													
≤ 4,00 m	6,67	10,00	13,33	16,67	20,00	23,34	26,67	30,00	33,34	36,67	40,00	43,34	46,67
≤ 5,00 m	8,33	12,50	16,67	20,84	25,00	29,17	33,34	37,50	41,67	45,84	50,00	54,17	58,34
≤ 6,00 m	10,00	15,00	20,00	25,00	30,00	35,00	40,00	45,00	50,00	55,00	60,00	65,01	70,01
≤ 7,00 m	11,67	17,50	23,34	29,17	35,00	40,84	46,67	52,50	58,34	64,17	70,01	75,84	81,67
≤ 8,00 m	13,33	20,00	26,67	33,34	40,00	46,67	53,34	60,00	66,67	73,34	80,01	86,67	93,34
≤ 9,00 m	15,00	22,50	30,00	37,50	45,00	52,50	60,00	67,51	75,01	82,51	90,01	97,51	105,01
≤ 10,00 m	16,67	25,00	33,34	41,67	50,00	58,34	66,67	75,01	83,34	91,67	100,01	108,34	116,68
≤ 11,00 m	18,33	27,50	36,67	45,84	55,00	64,17	73,34	82,51	91,67	100,84	110,01	119,18	128,34
≤ 12,00 m	20,00	30,00	40,00	50,00	60,00	70,01	80,01	90,01	100,01	110,01	120,01	130,01	140,01
≤ 13,00 m	21,67	32,50	43,34	54,17	65,01	75,84	86,67	97,51	108,34	119,18	130,01	140,84	151,68
≤ 14,00 m	23,34	35,00	46,67	58,34	70,01	81,67	93,34	105,01	116,68	128,34	140,01	151,68	163,35
≤ 15,00 m	25,00	37,50	50,00	62,51	75,01	87,51	100,01	112,51	125,01	137,51	150,01	162,51	175,01
≤ 16,00 m	26,67	40,00	53,34	66,67	80,01	93,34	106,68	120,01	133,34	146,68	160,01	173,35	186,68
≤ 17,00 m	28,34	42,50	56,67	70,84	85,01	99,17	113,34	127,51	141,68	155,85	170,01	184,18	198,35
≤ 18,00 m	30,00	45,00	60,00	75,01	90,01	105,01	120,01	135,01	150,01	165,01	180,01	195,02	210,02
≤ 19,00 m	31,67	47,50	63,34	79,17	95,01	110,84	126,68	142,51	158,35	174,18	190,02	205,85	221,68
≤ 20,00 m	33,34	50,00	66,67	83,34	100,01	116,68	133,34	150,01	166,68	183,35	200,02	216,68	233,35
≤ 21,00 m	35,00	52,50	70,01	87,51	105,01	122,51	140,01	157,51	175,01	192,52	210,02	227,52	245,02
≤ 22,00 m	36,67	55,00	73,34	91,67	110,01	128,34	146,68	165,01	183,35	201,68	220,02	238,35	256,69



GL

Discharge rates (m³/h) of untreated sewage in accordance with MEPC. 157(55),

specified by GL

Vessels breadth [B]: from **50,00 m** ≤ B < **60,00 m**

Average discharge per 24 hour period **9,26 m³/h** at a min. speed of **4** knots with a Draft of **5,00 m**

Average discharge per 24 hour period **298,17 m³/h** at a speed of **32** knots with a Draft of **23,00 m**

Speed V [in kt]	4≤V<6	6≤V<8	8≤V<10	10≤V<12	12≤V<14	14≤V<16	16≤V<18	18≤V<20	20≤V<22	22≤V<24	24≤V<26	26≤V<28	28≤V<32
Draft													
≤ 5,00 m	9,26	13,89	18,52	23,15	27,78	32,41	37,04	41,67	46,30	50,93	55,56	60,19	64,82
≤ 6,00 m	11,11	16,67	22,22	27,78	33,34	38,89	44,45	50,00	55,56	61,12	66,67	72,23	77,78
≤ 7,00 m	12,96	19,45	25,93	32,41	38,89	45,37	51,86	58,34	64,82	71,30	77,78	84,27	90,75
≤ 8,00 m	14,82	22,22	29,63	37,04	44,45	51,86	59,26	66,67	74,08	81,49	88,90	96,30	103,71
≤ 9,00 m	16,67	25,00	33,34	41,67	50,00	58,34	66,67	75,01	83,34	91,67	100,01	108,34	116,68
≤ 10,00 m	18,52	27,78	37,04	46,30	55,56	64,82	74,08	83,34	92,60	101,86	111,12	120,38	129,64
≤ 11,00 m	20,37	30,56	40,74	50,93	61,12	71,30	81,49	91,67	101,86	112,05	122,23	132,42	142,60
≤ 12,00 m	22,22	33,34	44,45	55,56	66,67	77,78	88,90	100,01	111,12	122,23	133,34	144,46	155,57
≤ 13,00 m	24,08	36,11	48,15	60,19	72,23	84,27	96,30	108,34	120,38	132,42	144,46	156,49	168,53
≤ 14,00 m	25,93	38,89	51,86	64,82	77,78	90,75	103,71	116,68	129,64	142,60	155,57	168,53	181,50
≤ 15,00 m	27,78	41,67	55,56	69,45	83,34	97,23	111,12	125,01	138,90	152,79	166,68	180,57	194,46
≤ 16,00 m	29,63	44,45	59,26	74,08	88,90	103,71	118,53	133,34	148,16	162,98	177,79	192,61	207,42
≤ 17,00 m	31,48	47,23	62,97	78,71	94,45	110,19	125,94	141,68	157,42	173,16	188,90	204,65	220,39
≤ 18,00 m	33,34	50,00	66,67	83,34	100,01	116,68	133,34	150,01	166,68	183,35	200,02	216,68	233,35
≤ 19,00 m	35,19	52,78	70,38	87,97	105,56	123,16	140,75	158,35	175,94	193,53	211,13	228,72	246,32
≤ 20,00 m	37,04	55,56	74,08	92,60	111,12	129,64	148,16	166,68	185,20	203,72	222,24	240,76	259,28
≤ 21,00 m	38,89	58,34	77,78	97,23	116,68	136,12	155,57	175,01	194,46	213,91	233,35	252,80	272,24
≤ 22,00 m	40,74	61,12	81,49	101,86	122,23	142,60	162,98	183,35	203,72	224,09	244,46	264,84	285,21
≤ 23,00 m	42,60	63,89	85,19	106,49	127,79	149,09	170,38	191,68	212,98	234,28	255,58	276,87	298,17

Discharge Rates at 28 knots									
Breadth	10 m	15 m	20 m	25 m	30 m	35 m	40 m	45 m	50 m
Draught									
1,00 m	2,59	3,89							
2,00 m	5,19	7,78	10,37	12,96					
3,00 m	7,78	11,67	15,56	19,45	23,34	27,22			
4,00 m	10,37	15,56	20,74	25,93	31,11	36,30	41,48	46,67	
5,00 m	12,96	19,45	25,93	32,41	38,89	45,37	51,86	58,34	64,82
6,00 m	15,56	23,34	31,11	38,89	46,67	54,45	62,23	70,01	77,78
7,00 m	18,15	27,22	36,30	45,37	54,45	63,52	72,60	81,67	90,75
8,00 m	20,74	31,11	41,48	51,86	62,23	72,60	82,97	93,34	103,71
9,00 m	23,34	35,00	46,67	58,34	70,01	81,67	93,34	105,01	116,68
10,00 m	25,93	38,89	51,86	64,82	77,78	90,75	103,71	116,68	129,64
11,00 m	28,52	42,78	57,04	71,30	85,56	99,82	114,08	128,34	142,60
12,00 m	31,11	46,67	62,23	77,78	93,34	108,90	124,45	140,01	155,57
13,00 m	33,71	50,56	67,41	84,27	101,12	117,97	134,83	151,68	168,53
14,00 m	36,30	54,45	72,60	90,75	108,90	127,05	145,20	163,35	181,50
15,00 m	38,89	58,34	77,78	97,23	116,68	136,12	155,57	175,01	194,46
16,00 m	41,48	62,23	82,97	103,71	124,45	145,20	165,94	186,68	207,42
17,00 m	44,08	66,12	88,16	110,19	132,23	154,27	176,31	198,35	220,39
18,00 m	46,67	70,01	93,34	116,68	140,01	163,35	186,68	210,02	233,35
19,00 m	49,26	73,89	98,53	123,16	147,79	172,42	197,05	221,68	246,32
20,00 m			103,71	129,64	155,57	181,50	207,42	233,35	259,28
21,00 m					163,35	190,57	217,80	245,02	272,24
22,00 m							228,17	256,69	285,21
23,00 m									298,17

This table is just to be used to get a quick overview of the possible Discharge rates.

