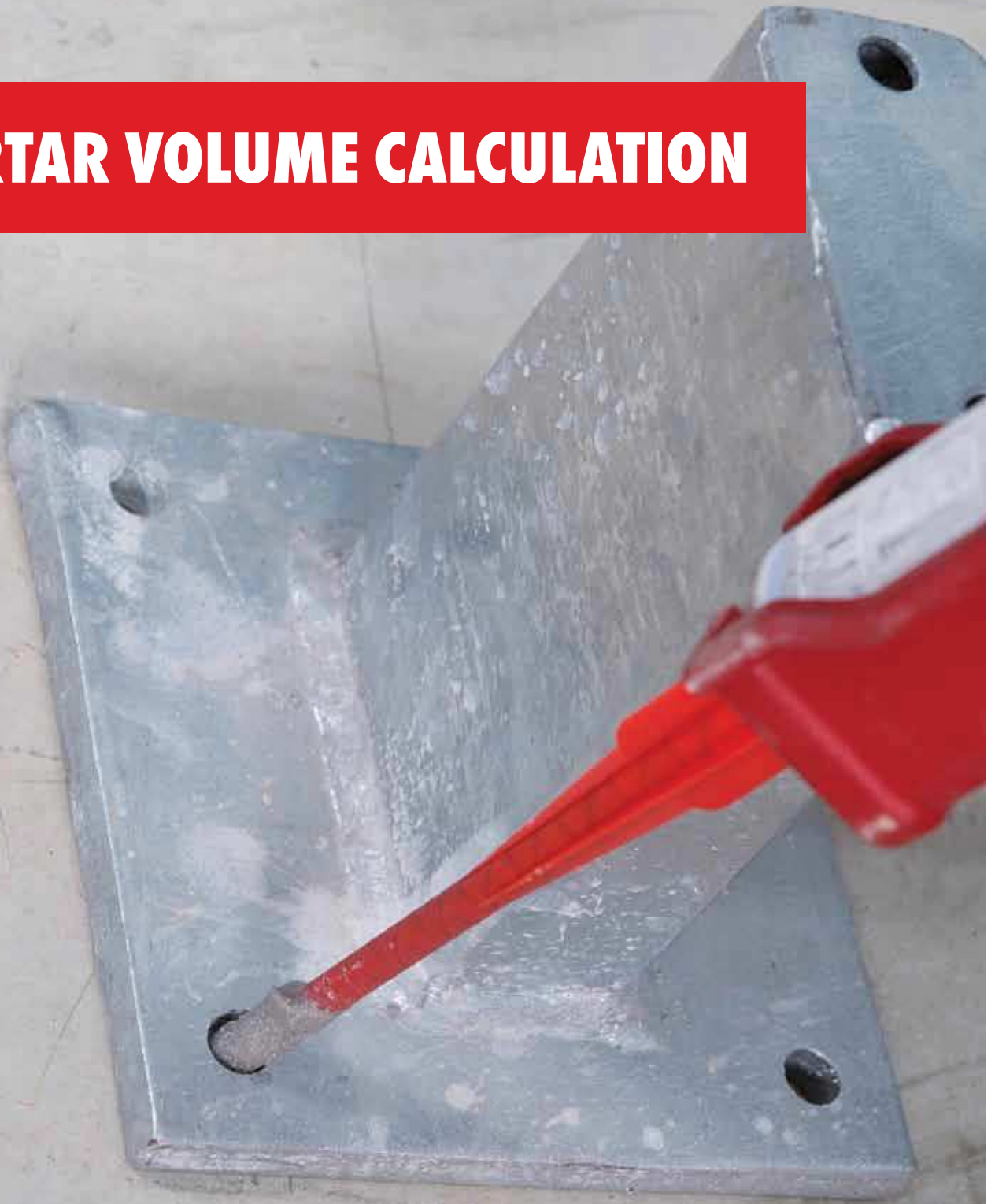


# MORTAR VOLUME CALCULATION



## CONCRETE



### Metrical threaded rod W-VI-A, W-VD-A

(WIT-UH 300, WIT-VM 250, WIT-PE 500, WIT-PM 200, WIT-PE 1000, WIT-EA 200)

Threaded rod dia.		M8	M10	M12	M16	M20	M20	M24	M30
<b>Drill hole dia.</b>	[mm]	10	12	14	18	22	24	28	35
<b>Amount of mortar</b> per anchorage depth <b><math>h_{ef} = 10\text{ mm}</math></b>	[ml]	0.65	0.82	0.98	1.36	1.79	2.67	3.23	4.87
<b>Amount of mortar*</b> per anchorage depth <b><math>h_{ef} = 100\text{ mm}</math></b>	[ml]	6.53	8.16	9.82	13.61	17.89	26.71	32.25	48.67
*Including ...% for discard, waste and other factors**		35%	30%	25%	25%	20%	20%	15%	15%
<b>Number of anchors [qty.] per cartridge at anchorage depth <math>h_{ef} = 100\text{ mm}</math></b>									
Threaded rod dia.		M8	M10	M12	M16	M20	M20	M24	M30
<b>Drill hole dia.</b>	[mm]	<b>10</b>	<b>12</b>	<b>14</b>	<b>18</b>	<b>22</b>	<b>24</b>	<b>28</b>	<b>35</b>
cartridge 150 ml	[qty.]	16	13	11	8	6	4	3	2
cartridge 280 ml	[qty.]	36	29	24	17	13	8	7	4
cartridge 300 ml	[qty.]	39	31	26	19	14	9	8	5
cartridge 320 ml	[qty.]	42	34	28	20	15	10	8	5
cartridge 330 ml	[qty.]	44	35	29	21	16	10	9	5
cartridge 420 ml	[qty.]	58	46	38	27	21	14	11	7
cartridge 825 ml	[qty.]	118	94	78	56	43	29	24	15
cartridge 385 ml	[qty.]	51	41	34	24	18	12	10	6
cartridge 585 ml	[qty.]	81	65	54	39	29	20	16	11
cartridge 1400 ml	[qty.]	206	165	137	99	75	50	41	27
<b>Necessary amount of mortar per anchor in [mm] on the scale on the cartridge for anchorage depth <math>h_{ef} = 100\text{ mm}</math></b>									
Threaded rod dia.		M8	M10	M12	M16	M20	M20	M24	M30
<b>Drill hole dia.</b>	[mm]	<b>10</b>	<b>12</b>	<b>14</b>	<b>18</b>	<b>22</b>	<b>24</b>	<b>28</b>	<b>35</b>
cartridge 150 ml, 1.69 ml/mm	[mm]	4	5	6	9	11	16	20	29
cartridge 280 ml, 1.69 ml/mm	[mm]	4	5	6	9	11	16	20	29
cartridge 300 ml, 1.74 ml/mm	[mm]	4	5	6	8	11	16	19	28
cartridge 320 ml, 1.69 ml/mm	[mm]	4	5	6	9	11	16	20	29
cartridge 330 ml, 1.69 ml/mm	[mm]	4	5	6	9	11	16	20	29
cartridge 420 ml 2.73 ml/mm	[mm]	3	3	4	5	7	10	12	18
cartridge 385 ml 2.74 ml/mm	[mm]	3	3	4	5	7	10	12	18
cartridge 585 ml 2.74 ml/mm	[mm]	3	3	4	5	7	10	12	18

\*\* Less mortar could be wasted depending on the number of serial drill holes, type of application and experience. The percentage can be adapted individually.

**Anchor rod W-VIZ-A**

(WIT-VM 100)



Anchor rod dia.		M8		M10		M12						
<b>Anchorage depth</b>	$h_{ef}$ = [mm]	<b>40</b>	<b>50</b>	<b>60</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>80</b>	<b>95</b>	<b>100</b>	<b>110</b>	<b>125</b>
<b>Drill-hole dia.</b>	[mm]	10	10	12	12	12	14	14	14	14	14	14
<b>Amount of mortar*</b>	[ml]	3.4	4.1	6.1	7.0	7.0	6.8	8.6	9.0	9.2	9.4	9.6
*Including ...% for discard, waste and other factors**		35%		30%		25%						
<b>Number of anchors per cartridge</b>												
cartridge 150 ml	[qty.]	31	26	18	15	15	16	12	12	11	11	11
cartridge 330 ml	[qty.]	85	70	47	41	41	42	33	32	31	30	30
cartridge 420 ml	[qty.]	111	92	62	54	54	55	44	42	41	40	39
<b>Necessary amount of mortar per anchor in [mm] on the scale on the cartridge</b>												
cartridge 150 ml, 1.69 ml/mm	[mm]	2	3	4	5	5	5	6	6	6	6	6
cartridge 330 ml, 1.69 ml/mm	[mm]	2	3	4	5	5	5	6	6	6	6	6
cartridge 420 ml, 2.73 ml/mm	[mm]	2	2	3	3	3	3	4	4	4	4	4

Anchor rod dia.		M16					M20			M24		
<b>Anchorage depth</b>	$h_{ef}$ = [mm]	<b>90</b>	<b>105</b>	<b>125</b>	<b>145</b>	<b>160</b>	<b>115</b>	<b>170</b>	<b>190</b>	<b>170</b>	<b>200</b>	<b>225</b>
<b>Drill-hole dia.</b>	[mm]	18	18	18	18	18	22	24	24	26	26	26
<b>Amount of mortar*</b>	[ml]	11.1	12.6	14.5	15.8	17.4	20.8	30.1	32.2	33.3	36.6	41.3
*Including ...% for discard, waste and other factors**		25%					20%			15%		
<b>Number of anchors per cartridge</b>												
cartridge 150 ml	[qty.]	9	8	7	6	6	5	3	3	3	3	2
cartridge 330 ml	[qty.]	26	23	20	18	16	13	9	9	8	7	7
cartridge 420 ml	[qty.]	34	30	26	24	21	18	12	11	11	10	9
<b>Necessary amount of mortar per anchor in [mm] on the scale on the cartridge</b>												
cartridge 150 ml, 1.69 ml/mm	[mm]	7	8	9	10	11	13	18	20	20	22	25
cartridge 330 ml, 1.69 ml/mm	[mm]	7	8	9	10	11	13	18	20	20	22	25
cartridge 420 ml, 2.73 ml/mm	[mm]	5	5	6	6	7	8	12	12	13	14	16

**Anchor rod W-VIZ-A DYNAMIC**

(WIT-VM 100)



Anchor rod dia.		M12		M16		M20	
<b>Anchorage depth</b>	$h_{ef}$ = [mm]	<b>100</b>	<b>125</b>	<b>170</b>			
<b>Fixture thickness</b>	$t_{fix}$ [mm]	<b>25</b>	<b>50</b>	<b>25</b>	<b>30</b>	<b>50</b>	<b>50</b>
<b>Drill-hole dia.</b>	[mm]	14	18	24			
<b>Amount of mortar*</b>	[ml]	12.2	15.2	18.5	19.3	22.5	44.6
*Including ...% for discard, waste and other factors**		25%		25%		20%	
<b>Number of anchors per cartridge</b>							
cartridge 150 ml	[qty.]	9	7	5	5	4	2
cartridge 330 ml	[qty.]	20	16	13	13	11	6
cartridge 420 ml	[qty.]	31	25	20	19	16	8
<b>Necessary amount of mortar per anchor in [mm] on the scale on the cartridge</b>							
cartridge 150 ml, 1.69 ml/mm	[mm]	8	10	12	12	14	27
cartridge 330 ml, 1.69 ml/mm	[mm]	8	10	12	12	14	27
cartridge 420 ml, 2.73 ml/mm	[mm]	5	6	7	5	9	17

\*\* Less mortar could be wasted depending on the number of serial drill holes, type of application and experience. The percentage can be adapted individually.

## MASONRY



With sleeve SH, hollow stones and solid bricks

Metrical threaded rods W-VI-A

Internal threaded rods W-VI-IG

(WIT-VM 250, WIT-PM 200, WIT-EA 200)

W-VI-A dia. W-VI-IG dia.		M8	M8/M10		M12/M16			IG M6	IG M8 IG M10
		12x80	16x85	16x130	20x85	20x130	20x200	16x85	20x85
Sleeve SH									
Drill-hole dia.	d <sub>0</sub> [mm]	12	16	16	20	20	20	16	20
Drill-hole depth	h <sub>0</sub> [mm]	85	90	135	90	135	205	90	90
Amount of mortar*	[ml]	11.2	24.9	38	41.1	62.9	96.7	24.9	41.1
*Including ...% for discard, waste and other factors**		30%	25%	25%	20%	20%	20%	25%	20%
<b>Number of anchors per cartridge</b>									
cartridge 150 ml	[qty.]	9	4	2	2	1	1	4	2
cartridge 300 ml	[qty.]	23	10	6	6	4	2	10	6
cartridge 330 ml	[qty.]	25	11	7	7	4	3	11	7
cartridge 420 ml	[qty.]	33	15	10	9	6	3	15	9
<b>Necessary amount of mortar per anchor in [mm] on the scale on the cartridge</b>									
cartridge 150 ml, 1.69 ml/mm	[mm]	7	15	23	25	38	58	15	25
cartridge 300 ml, 1.74 ml/mm	[mm]	7	15	22	24	37	56	15	24
cartridge 330 ml, 1.69 ml/mm	[mm]	7	15	23	25	38	58	15	25
cartridge 420 ml, 2.73 ml/mm	[mm]	5	10	14	16	24	36	10	16

Without sleeve SH, solid bricks

Metrical threaded rods W-VI-A

Internal threaded rods W-VI-IG

(WIT-VM 250, WIT-PM 200, WIT-EA 200)

W-VI-A dia. W-VI-IG dia.		M8	M10	M12	M16	IG M6	IG M8	IG M10
		Drill-hole dia.	d <sub>0</sub> [mm]	10	12	14	18	12
Drill-hole depth	h <sub>0</sub> [mm]	80	90	100	100	90	100	100
Amount of mortar*	[ml]	4.1	6.6	10.0	16.6	6.6	10.0	16.6
*Including ...% for discard, waste and other factors**		35%	30%	25%	25%	30%	25%	25%
<b>Number of anchors per cartridge</b>								
cartridge 150 ml	[qty.]	26	16	11	6	16	11	6
cartridge 300 ml	[qty.]	63	39	26	15	39	26	15
cartridge 330 ml	[qty.]	70	43	29	17	43	29	17
cartridge 420 ml	[qty.]	92	57	38	22	57	38	22
<b>Necessary amount of mortar per anchor in [mm] on the scale on the cartridge</b>								
cartridge 150 ml, 1.69 ml/mm	[mm]	3	4	6	10	4	6	10
cartridge 300 ml, 1.74 ml/mm	[mm]	3	4	6	10	4	6	10
cartridge 330 ml, 1.69 ml/mm	[mm]	3	4	6	10	4	6	10
cartridge 420 ml, 2.73 ml/mm	[mm]	2	3	4	7	3	4	7

\*\* Less mortar could be wasted depending on the number of serial drill holes, type of application and experience. The percentage can be adapted individually.