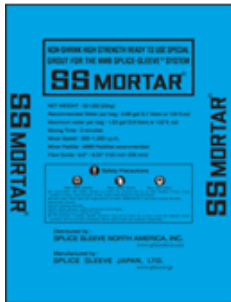


### 1. SS MORTAR® (GROUT) ENGINEERING DATA SHEET: SSM-J® 2012

SS Mortar® (Grout) manufactured by Splice Sleeve Japan, Ltd. is a special cementitious non-metallic filler grout developed for the NMB Splice-Sleeve® System. The use of any other grout will void all warranties, expressed or otherwise implied.



SS Mortar® (Grout) is packaged in 55-lbs (25-kg) moisture resistant bags. The required quantity of SS Mortar® shall be calculated from the Table shown below. **High Early Strength:** The grout in a flowable consistency will attain above 4,000 psi in less than 24 hr. at a temperature of 68°F (20°C). Rapid strength gain allows erection to continue.

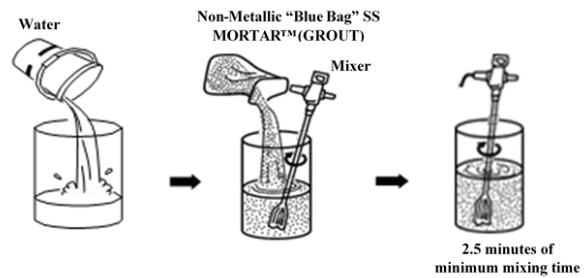
**High Ultimate Strength:** The grout attains 14,000 psi compressive strength in 28 days at 68°F (20°C).

SS Mortar® is a ready-to-use formulation requiring only the proper amount of water, which is suggested at 0.98 gal. = 125 fl. oz. = 3.7 liters per bag. The maximum water is 1.03 gal. = 132 fl. oz. = 3.9 liters. Do not use admixtures.

Mixing time is a minimum of 2½ minutes with ≥ 7 amp electric mixer, providing 500 to 1,300 rpm and a proper paddle.

**Table I-3: Grout Requirement for Sleeves**

REBAR Size		Splice-Sleeve	SS Mortar	
U.S.	Metric	Model	lb./sleeve	Sleeves/Bag
#5	16 MM	5 U-X	0.94	<b>58.8</b>
#6	20 MM	6 U-X	1.31	<b>42.0</b>
#7	22 MM	7 U-X	2.06	<b>26.7</b>
#8	25 MM	8 U-X	2.7	<b>20.4</b>
#9	28 MM	9 U-X	3.2	<b>17.2</b>
#10	32 MM	10 U-X	4.01	<b>13.7</b>
#11	35 MM	11 U-X	5.01	<b>11.0</b>
#11	35 MM	SNX 11	4.91	<b>11.2</b>
#11	35 MM	A11W	6.07	<b>9.1</b>
#14	40 MM	14 U-X	7.67	<b>7.2</b>
#18	57 MM	18 U	22.62	<b>2.4</b>
Inlet + Outlet PVC tubes x 5"			0.25	≈ <b>225</b>



Note: Always mix full bags; no partial bags

Year	11	12	13	14	15	16	17	18	19	20		
	A	B	C	D	E	F	G	H	I	J		
Month	1	2	3	4	5	6	7	8	9	10	11	12
	A	B	C	D	E	F	G	H	I	J	K	L
Day	As a number from 1 to 31											

Grout quantities shown in the table above are in dry powder weight of the grout to fill the space inside the sleeve after both rebars have been inserted into the sleeve. If pumping grout tubes add a little more—see example on chart. When “upsizing” add 20% for each rebar size.

An additional overage of 15% is recommended to provide for typical waste and field loss while continuously pumping large numbers of sleeves. The above overage does not cover losses from “left over” waste in the bucket, pump, hose and elsewhere. It is recommended that you allow an additional bag per grouting session. Better to have a bit too much than a bit too little and delay the job.

SS Mortar® should be stored in moderate/cool and dry conditions. It has a “freshness” bag life of one (1) year. Bags have a date stamp on the top using letters for the year (10 year period) followed by month and the last numbers mentions the day as shown in Table and Figure.



CF 25: 13 - 06 - 25 = June 25, 2013

2. SS MORTAR® (GROUT) PERFORMANCE DATA

Table I-4: SS Mortar® (Grout) - Fresh mortar Test Results

Water volume	Mix Temp	Curing Temp	Set Time Hr-Min		Flow Guide	Bleeding %
			Initial	Final		
0.98 gal (3.7 liters)	68°F (20°C)	41°F (5°C)	9 hr. 31 min.	13 hr. 35 min.	6 1/4" (160 mm)	0.00%
		68°F (20°C)	4 hr. 18 min.	5 hr. 55 min.	6 5/8" (170 mm)	0.00%
		86°F (30°C)	2 hr. 23 min.	3 hr. 20 min.	6 1/2" (165 mm)	0.00%

Non-metallic, SS Mortar® must be used when the surrounding concrete and sleeve temperature is between 35°F to 140°F (2°C to 60°C). Freezing grout, before it achieves 1,500 psi will deplete strength. The grout should be mixed and pumped between 50°F and 95°F (10°C to 35°C). In extreme temperatures warm or iced water can be added to adjust mortar temperature. As per the Table shown below, strength gain of SS Mortar® is directly related to temperature and thus freezing/very cold conditions may require a heating plan until connection strength is reached allowing continued erection and structural specifications. (See Splice Sleeve User’s Manual and/or call Splice Sleeve directly).

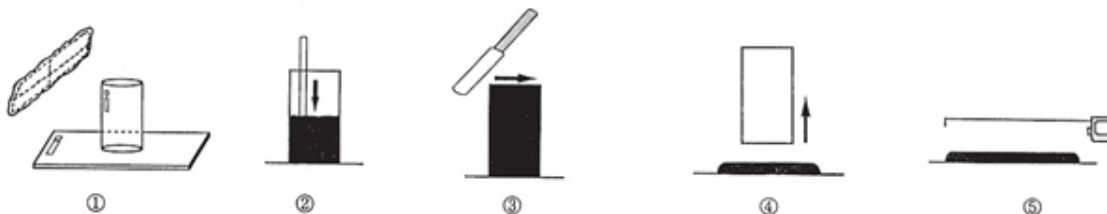
Table I-5: SS Mortar® (Grout) - Compressive Strength Time vs. Temperature

Curing Temperature	Compressive Strength, psi (MPa)					
	12 hrs.	18 hrs.	1 day	3 days	7 days	28 days
41°F (5°C)	----	834 (6)	1,869 (13)	5,823 (40)	8,871 (61)	13,860 (96)
50°F (10°C)	410 (3)	1,869 (13)	2,905 (20)	6,858 (47)	9,907 (68)	14,895 (103)
68°F (20°C)	1,869 (13)	3,328 (23)	4,364 (30)	8,317 (57)	11,366 (78)	16,354 (113)
86°F (30°C)	2,905 (20)	4,364 (30)	5,399 (37)	9,352 (64)	12,401 (86)	17,389 (120)
104°F (40°C)	3,708 (26)	5,167 (36)	6,202 (43)	10,155 (70)	13,204 (91)	18,192 (125)

Calculated strength — calculated from the formula (24.758 Ln x Cumulative Temperature) -54.183

Consistency Flow tests are run using a “Flow Guide”. The diameter of the “puddle” should be between 155 mm (6”) minimum to 235 mm (9 ¼”) maximum. The Flow Guide consists of a 2 in. (50 mm) diameter x 4 in. (100 mm) cylinder placed in the center of a level, smooth, non-absorbent surface. After filling and lifting the cylinder, the diameter of the resulting “puddle” of grout is measured. Figure below shows the step by step procedure for the flow test.

Details of the procedure are described in **GROUTPRO-N1**: “Recommended Procedure for Field Sampling and Testing SS Mortar®”.



Related Documents:

- Material Safety Data Sheet: SS Mortar®
- Users’ Manual for NMB Splice-Sleeve® System
- GROUTPRO-N1: Recommended Procedure for Field Sampling & Testing SS Mortar®
- Splice Sleeve “Grout Operation” slideshow.