

**MATERIALS REQUIRED & TECHNICAL INFORMATION
TO BE FURNISHED FOR C.C. MIX DESIGN**

I. CEMENT OPC (33/43/53 GRADES), PPC, PSC (PORTLAND SLAG CEMENT)

1. TO BE SUPPLIED IN COMPANY SEALED BAGS
2. NO. OF BAGS - PLEASE SEE ANN. I TO V

II. FINE AGGREGATE

FOR ALL MIXES

NATURAL SAND

1. ZONE I TO IV AS PER IS 383-2016
2. NO. OF BAGS - PLEASE SEE ANN. I TO V

CRUSHED STONE SAND (CSS)

1. ZONE I TO IV AS PER IS 383-2016
2. NO. OF BAGS - PLEASE SEE ANN. I TO V
3. ENCLOSE MANUFACTURER'S CFT.(PERMISSION FROM GOVT.) COPY DULY ATTESTED BY THE EXECUTIVE ENGINEER CONCERNED

FOR SHOTCRETE

NATURAL SAND OR CRUSHED STONE SAND (CSS)

1. CONFORMING TO GRADING ZONE-II OR ZONE-III AS PER IS 383-2016 & IS 9012-2016
2. NO. OF BAGS - PLEASE SEE ANN. I TO V
3. IN CASE OF CSS - TO ENCLOSE MANUFACTURER'S CFT.(PERMISSION FROM GOVT.) COPY DULY ATTESTED BY THE EXECUTIVE ENGINEER CONCERNED

III. COARSE AGGREGATE OF NOMINAL MAXIMUM SIZE (150MM/ 80MM/ 40MM/ 20MM/ 12.5MM/ 10MM)

FOR ALL MIXES

1. SAMPLES CONFORMING TO THE SPECIFICATIONS OF IS 10262-2019 FOR 150MM, 80MM AND FOR REMAINING COARSE AGGREGATE AS PER THE SPECIFICATIONS OF IS 383-2016 REAFFIRMED
2. NO. OF BAGS - PLEASE SEE ANN. I TO V

FOR SHOTCRETE (10MM/ 12.5MM/ 20MM) COARSE AGGREGATE OF NOMINAL MAXIMUM SIZE.

1. SAMPLES CONFORMING TO THE SPECIFICATIONS OF IS 9012-2016 REAFFIRMED
2. NO. OF BAGS - PLEASE SEE ANN. I TO V

IV ADMIXTURE

1. 1 LTR OF SEALED SAMPLE ALONG WITH BROCHURE COPY (MANDATORY)

V TECHNICAL INFORMATION (DATA)

1. PLEASE SEND THE INFORMATION AS PER THE ANN.II ENCLOSED

ANNEXURE - 1

GUIDELINES FOR SENDING MATERIALS FOR C.C.MIX DESIGN

<u>MATERIALS REQUIRED</u>		<u>QUANTITY REQUIRED</u>	<u>ONE MSA</u>	<u>MORE MSA</u>	<u>NO OF BAGS FOR EVERY EXTRA MSA</u>
CEMENT	=	BAGS(EACH BAG OF ABOUT 50 Kg.)	4	6	+2
SAND	=	BAGS(EACH BAG OF ABOUT 30 Kg.)	6	10	+4
150mm METAL	=	BAGS(EACH BAG OF ABOUT 30 Kg.)	6	6	-
80mm METAL	=	BAGS(EACH BAG OF ABOUT 30 Kg.)	6	6	+2
40mm METAL	=	BAGS(EACH BAG OF ABOUT 30 Kg.)	6	8	+2
20mm METAL	=	BAGS(EACH BAG OF ABOUT 30 Kg.)	6	10	+4
12.5mm METAL	=	BAGS(EACH BAG OF ABOUT 30 Kg.)	6	8	+2
10mm METAL	=	BAGS(EACH BAG OF ABOUT 30 Kg.)	6	12	+6

EXAMPLE:

FOR 150MSA - CEMENT , SAND , 150mm METAL & BELOW METALS AS PER THE REQUIREMENT
AND SO ON FOR OTHER 80,40,20,12.5,10 MSAs

ANNEXURE - 2
(CHECKLIST FOR TECHNICAL DATA AND MATERIALS FOR C.C.MIX DESIGN)

DATA TO BE FURNISHED

GRADE OF CEMENT & BRAND	:	OPC (33 / 43 / 53), PPC , PSC
TYPE OF CONCRETE	:	PCC / RCC
GRADE OF CONCRETE	:	M10/M15/M20/M25/ M30/M35/M40/M45/M50...
MAXIMUM SIZE OF AGGREGATE	:	150mm/ 80mm / 40mm / 20mm / 12.5mm / 10mm
DEGREE OF WORKABILITY	:	IN TERMS OF SLUMP RANGE IN mm (AS PER ANNEXURE -3)
DEGREE OF SITE CONTROL	:	GOOD / FAIR (AS PER ANNEXURE - 4)
TYPE OF EXPOSURE	:	MILD / MODERATE /SEVERE/ VERY SEVERE/EXTREME (AS PER ANNEXURE - 5)

NOTE: THE ABOVE DATA HAS TO BE FURNISHED SEPARATELY FOR EACH MIX.

MATERIALS TO BE SUPPLIED

CEMENT	=	()	BAGS (EACH BAG OF ABOUT 50 Kg.)
SAND	=	()	BAGS (EACH BAG OF ABOUT 30 Kg.)
150mm METAL	=	()	BAGS (EACH BAG OF ABOUT 30 Kg.)
80mm METAL	=	()	BAGS (EACH BAG OF ABOUT 30 Kg.)
40mm METAL	=	()	BAGS (EACH BAG OF ABOUT 30 Kg.)
20mm METAL	=	()	BAGS (EACH BAG OF ABOUT 30 Kg.)
12.5mm METAL	=	()	BAGS (EACH BAG OF ABOUT 30 Kg.)
10mm METAL	=	()	BAGS (EACH BAG OF ABOUT 30 Kg.)

ANNEXURE - 3

IS 456 : 2000

WORKABILITY OF CONCRETE:

- 7.1 THE CONCRETE MIX PROPORTIONS CHOSEN SHOULD BE SUCH THAT THE CONCRETE IS OF ADEQUATE WORKABILITY FOR THE PLACING CONDITIONS OF THE CONCRETE AND CAN PROPERLY BE COMPACTED WITH THE MEANS AVAILABLE. SUGGESTED RANGES OF WORKABILITY OF CONCRETE MEASURED IN ACCORDANCE WITH IS 1199 ARE GIVEN BELOW:

PLACING CONDITIONS	DEGREE OF WORKABILITY	SLUMP (mm)
(1)	(2)	(3)
BLINDING CONCRETE; SHALLOW SECTIONS; PAVEMENTS USING PAVERS	VERY LOW	SEE 7.1.1
MASS CONCRETE; LIGHTLY REINFORCED SECTIONS IN SLABS, BEAMS, WALLS, COLUMNS; FLOORS; HAND PLACED PAVEMENTS; CANAL LINING; STRIP FOOTINGS	LOW	25-75
HEAVILY REINFORCED SECTIONS IN SLABS, BEAMS, WALLS, COLUMNS; SLIPFORM WORK; PUMPED CONCRETE	MEDIUM	50-100
		75-100
TRENCH FILL; IN-SITU PILING TREMIE CONCRETE	HIGH	100-150
	VERY HIGH	SEE 7.1.2

- 7.1.1 IN THE 'VERY LOW' CATEGORY OF WORKABILITY WHERE SITE CONTROL IS NECESSARY, FOR EXAMPLE PAVEMENT QUALITY CONCRETE, MEASUREMENT OF WORKABILITY BY DETERMINATION OF COMPACTING FACTOR WILL BE MORE APPROPRIATE THAN SLUMP (SEE IS 1199) AND A VALUE OF COMPACTING FACTOR OF 0.75 TO 0.80 IS SUGGESTED
- 7.1.2 IN THE 'VERY HIGH' CATEGORY OF WORKABILITY, MEASUREMENT OF WORKABILITY BY DETERMINATION OF FLOW WILL BE APPROPRIATE (SEE IS 9103)

ANNEXURE - 4

IS 10262 : 2019

DEGREE OF SITE CONTROL

GOOD:	SITE CONTROL HAVING PROPER STORAGE OF CEMENT; WEIGH BATCHING OF ALL MATERIALS; CONTROLLED ADDITION OF WATER; REGULAR CHECKING OF ALL MATERIALS, AGGREGATE GRADINGS AND MOISTURE CONTENT; AND PERIODICAL CHECKING OF WORKABILITY AND STRENGTH.
FAIR:	SITE CONTROL HAVING DEVIATION FROM THE ABOVE.

ANNEXURE - 5

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TABLE 3 ENVIRONMENTAL EXPOSURE CONDITIONS

SL.NO.	ENVIRONMENT	EXPOSURE CONDITIONS
(1)	(2)	(3)
(i)	MILD	CONCRETE SURFACES PROTECTED AGAINST WEATHER OR AGGRESSIVE CONDITIONS, EXCEPT THOSE SITUATED IN COASTAL AREA.
(ii)	MODERATE	CONCRETE SURFACES SHELTERED FROM SEVERE RAIN OR FREEZING WHILST WET. CONCRETE EXPOSED TO CONDENSATION AND RAIN. CONCRETE CONTINUOUSLY UNDER WATER. CONCRETE IN CONTACT OR BURIED UNDER NON AGGRESSIVE SOIL/GROUND WATER. CONCRETE SURFACES SHELTERED FROM SATURATED SALT AIR IN COASTAL AREA.
(iii)	SEVERE	CONCRETE SURFACES EXPOSED TO SEVERE RAIN, ALTERNATE WETTING AND DRYING OR OCCASIONAL FREEZING WHILST WET OR SEVERE CONDENSATION. CONCRETE COMPLETELY IMMERSSED IN SEA WATER. CONCRETE EXPOSED TO COASTAL ENVIRONMENT.
(iv)	VERY SEVERE	CONCRETE SURFACES EXPOSED TO SEA WATER SPRAY, CORROSIVE FUMES OR SEVERE FREEZING CONDITIONS WHILST WET. CONCRETE IN CONTACT WITH OR BURIED UNDER AGGRESSIVE SUB-SOIL/GROUND WATER.
(v)	EXTREME	SURFACE OF MEMBERS IN TIDAL ZONE. MEMBERS IN DIRECT CONTACT WITH LIQUID/ SOLID AGGRESSIVE CHEMICALS.