Monoset
Monoset 180

ultra-rapid strength gain mortars and fine concretes

FEATURES
- **high early strength mortar and concrete**
- **will take heavy traffic after 1 hour**
- **for floor screeds, floor repairs**
- **bedding mortar for bricks, blocks, paviours, manholes, landing lights, kerbs**
- **selected grades are waterproof**

SPECIFICATION CLAUSES

1. Levelling mortar for manhole frames, gulleys
The levelling mortar shall be Monoset Mortar, Monoset Concrete or Monoset 241 (as appropriate) by Ronacrete Ltd, telephone +44 (0) 1279 638700. All materials to be applied in accordance with manufacturers instructions.

2. Floor repairs 2mm-6mm thick
The floor repair shall be Monoset RXT by Ronacrete Ltd, telephone +44 (0) 1279 638700. The primer is to be Monoset Primer. All materials to be applied in accordance with manufacturers instructions.

3. Floor repairs 6mm-50mm thick
The floor repair shall be Monoset RX by Ronacrete Ltd, telephone +44 (0) 1279 638700. The primer is to be Monoset Primer. All materials to be applied in accordance with manufacturers instructions.

4. Floor repairs 12mm-50mm thick
The floor repair shall be Monoset RXG by Ronacrete Ltd, telephone +44 (0) 1279 638700. The primer is to be Monoset Primer. All materials to be applied in accordance with manufacturers instructions.

5. Floor repairs 26mm-150mm thick
The floor repair shall be Monoset Concrete RX by Ronacrete Ltd, telephone +44 (0) 1279 638700. The primer is to be Monoset Primer. All materials to be applied in accordance with manufacturers instructions.

6. Floor repairs 50mm-150mm thick
The floor repair shall be Monoset Concrete by Ronacrete Ltd, telephone +44 (0) 1279 638700. The primer is to be Monoset Primer. All materials to be applied in accordance with manufacturers instructions.

7. Bedding kerbs and paviours
The bedding mortar shall be Monoset RX by Ronacrete Ltd, telephone +44 (0) 1279 638700. The primer is to be Monoset Primer. All materials to be applied in accordance with manufacturers instructions.

SUMMARY APPLICATION PROCEDURE

1. Levelling mortar for manhole frames, gulleys
1. prepare surface
2. mix and lay mortar bed
3. immediately place brickwork or position ironwork
4. backfill with Monoset Concrete
5. lay asphalt or tarmac
6. cure and traffic

Floor repairs (see Specification Clause 2 to 6 above)
1. prepare surface
2. apply Monoset Primer
3. mix and apply the appropriate grade of Monoset
4. optionally apply epoxy floor coating (refer to Ronadeck HB, EWB)
5. traffic

Monoset RX as a bedding mortar (see Specification Clause 7 above)

1. prepare surface
2. mix and apply Monoset Primer to substrate and back of component
3. mix and apply Monoset RX
4. bed component in wet mortar
5. protect
6. traffic

Description
Monoset is a range of mortars and fine concretes designed for rapid strength gain and low temperature use. Within one hour of mixing (depending on temperature) the material will have gained sufficient strength to take foot and vehicle traffic including cars, lorries, fork trucks and other machinery.

The speed of Monoset makes it ideal for use on roads, motorways, slipways and ramps, tidal areas, airports and stations, in factories, warehouses and goods depots and in all other areas where speed and rapid strength gain is of paramount importance. After just one hour of mixing a surface repaired with Monoset or a component bedded on Monoset can be opened to foot and vehicle traffic.

As well as achieving rapid strength Monoset also works at low temperatures when conventional mortars cannot be used.

Monoset 180
Monoset 180 is a range of mortars and fine concretes designed for rapid strength gain, low temperature use and machine mixing. Within three hours (180 minutes) of mixing (depending on temperature) the material will have gained sufficient strength to take foot and vehicle traffic including cars, lorries, fork trucks and other machinery.

Monoset 180 is used where relatively large volumes of mortar have to be mixed and placed which cannot be practically hand mixed.

Applications for Monoset
- raising and bedding street ironwork
- bedding and securing kerbs
- emergency floor repairs
- concrete carriageway repairs
- securing copings
- filling potholes
- casting rapid set concrete
- airport runway hardstanding repairs

Working Time and Mixing (Monoset)
Monoset is a rapid set mortar system, designed for hand mixing in small volume. The working time is approximately 10-15 minutes, dependent on material and ambient temperature. It must therefore be mixed close to the area of application so that it can be placed and finished before initial set.

For larger volume work where hand mixing is not possible but rapid strength gain is required, Monoset 180 and Modified Monoset are available. These are manufactured to order based on specific working time and strength gain within a defined period. Further information is available from the Technical Department.

Working Time and Mixing
Monoset 180 can be mixed using a drill with suitable paddle attachment, in a forced action mixer, or by hand. The working time is approximately 10-20 minutes, dependent on material and ambient temperature and mixing time. It must be mixed close to the area of application so that it can be placed and finished before initial set. Excessive machine mixing should be avoided as this will accelerate the set and generate a greater exotherm.

Place the powders and sands (and aggregates) in to the mixer or mixing container, dry mix until components evenly dispersed then add the specified quanity of clean, potable water or the supplied gauging liquid and mix until a homogeneous mortar/concrete of suitable working consistency is produced. Mixing time should not be more than 2-3 minutes.

For smaller volume work where a more rapid set and strength gain is required, standard Monoset should be used.

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Monoset/Monoset 180 - Prepacked mortars for floor repair

Advantages
- ultra-rapid strength gain
- traffic within 1-2 hours of mixing
- low temperature working down to -10°C
- prepacked for ease of use and site control
- high strengths within hours
- thin section applications down to 2mm depending on grade
- established track record since 1981
- economical and durable

Working Temperatures
Monoset can be used in most weather conditions and in a wide temperature range, from -10°C to 25°C and above. At high ambient temperature the working time of the mix will be considerably reduced; it will be increased at lower temperatures. Care must be taken when using Monoset in extreme temperatures to ensure that the water used for damping, and the primer, does not freeze or dry/evaporate on contact with the substrate. In very low temperatures for additional speed warm water or warmed gauging liquid may be used for mixing. Machine mixing may also be possible; consult Ronacrete Technical Department.

Health & Safety
Monoset is non-hazardous although protective clothing such as goggles, overalls and gloves is recommended to prevent any effect from prolonged skin contact, inhalation or ingestion.

In the event of skin contact, wash with soap and water. Seek medical advice if irritation or pain occurs. In the event of eye contact, irrigate with plenty of clean water and seek immediate medical advice. In the event of ingestion, do not induce vomiting. Seek immediate medical advice.

Working Instructions

A. Raising and bedding ironwork, reseating manhole frames and gulleys Monoset Mortar, Monoset Concrete, Monoset 241

When using Monoset 241 in place of Monoset Mortar add an equal volume of medium grade sharp sand to the Monoset 241 powder and use as instructed below for Monoset Mortar.

When using Monoset 241 in place of Monoset Concrete add an equal volume of 10-5mm aggregate to the Monoset 241 powder and use as indicated below for Monoset concrete.

1. the area to be treated should be clean and free from grease, dirt and any friable or deleterious material
2. damp the surface with clean water and remove excess
3. working close to the area of application hand mix the supplied powders and sand (Monoset 180 can be machine mixed)
4. add sufficient water (see label) and hand mix until required consistency achieved (Monoset 180 can be machine mixed)
5. immediately place the mixed mortar on to the surface noting the restricted working life
6. bed brickwork or reposition ironwork
7. backfill around frame with Monoset Concrete prior to laying asphalt or tarmac; mixing instrtuctions same as Monoset Mortar
8. DTP Preferred Method No.7 "**Adjustment of Street Ironwork**" specifies minimum compressive strength of 10N/mm² before frame can be opened to traffic. Monoset Mortar and Monoset Concrete reach this after 1 hour at 20° C
9. traffic the surface when it is hard enough to do so

B. Floor Repairs
2mm - 6mm Monoset RXT
6mm - 40mm Monoset RX
12mm - 50mm Monoset RXG
26mm - 150mm Monoset Concrete RX
50mm - 150mm Monoset Concrete

1. prepare repair area by mechanical abrasion to remove loose, unsound and friable material; provide a vertical saw cut around the periphery of the area. Remove oil and grease and other contamination which may impair adhesion. Vacuum clean to remove dust and debris.
2. the substrate can be tested to ensure it is strong enough to restrain the repair; refer to BS8204 Part 3:1993
3. damp the surface with clean water; soak very porous surfaces for 24 hours; remove all standing and surplus water leaving the surface damp
4. mix and apply Monoset Primer ensuring total uniform coverage. Only prime an area which can be covered by the mortar within the working time of the primer (typically 15-60 minutes depending on temperature, air movement and surface porosity)
5. hand mix the appropriate grade of Monoset, close to the area of application by dry mixing the powders and sands (and aggregates) and adding sufficient of the supplied gauging liquid, or water when using Monoset Concrete, to provide the required consistency (Monoset 180 can be machine mixed)
6. apply the mixed Monoset on to the wet or tacky primer, compact and close the surface with a float or trowel. If the primer dries, scarify by close cross hatch scratching and reapply
7. where the total repair thickness exceeds the Maximum Depth per Layer quoted in "Materials Selection Guide", lay in more than one layer, ensuring each is not less than the Minimum Depth Per Layer. If the previous layer begins to firm up before the next is placed, scratch the surface and apply Monoset Primer between layers
8. protect the surface until hard enough to traffic (typically 1 hour at 20°C)

C. Bedding Kerbs, Paviours, Copings
1. mechanically abrade substrate; remove all contamination, grease, oil and loose material to provide a sound substrate strong enough to receive the high strength bedding mortar
2. damp substrate and underside of component with clean water; remove excess
3. apply Monoset Primer to both surfaces whilst damp; do not allow to dry. If surface dries scarify and remove dried primer and reapply.
4. working close to the area of application hand mix Monoset RX by dry mixing the powder and sand and adding sufficient gauging liquid to provide the desired consistency mortar (Monoset 180 can be machine mixed)
5. apply the mixed Monoset to the wet/tacky primer and place component in to wet mortar. Compact ensuring contact. Remove excess mortar. Avoid staining face of component. Bed depth is typically 10mm but may be between 6mm and 50mm.
6. protect the surface until hard (typically 1 hour at 20°C)
7. if required rake out joints and repoint

Monoset Technology
It is important to note that Monoset is designed for small volume application where rapid strength gain is of prime importance. The hydration of Monoset creates an exotherm; this allows the material to be used at low temperatures. This reaction is controlled in small volume mixes although heat and shrinkage cracking can occur when using larger volumes. For bonded applications such minor cracking is not detrimental to the performance of the material.

Substrate Testing
It is important when carrying out floor repairs with Monoset that the substrate is suitably prepared with aggregate exposed and that the substrate is sufficiently strong to receive a high strength repair. The recommendations given in BS8204 Part 3 1993 refer to the testing of substrates before applying mortars and fine concretes and these recommendations can be followed for repairs in strategic locations.

Shelf Life and Storage
Monoset should be stored unopened between 5°C and 25°C in dry

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Site Attendance
When on site Ronacrete representatives are able, if asked, to give a general indication of the correct method of installing a Ronacrete product. It is important to bear in mind that Ronacrete Ltd is a manufacturer and not an application contractor and it is therefore the responsibility of the contractor and his employer to ensure he is aware of and implements the correct practices and procedures to ensure the correct installation of the product and that liability for its correct installation lies with the contractor and not with Ronacrete Ltd.

Monoset Powder
Monoset Powder is the reactive agent within all grades of Monoset which produces the rapid strength gain and the ability to use the material at low temperature.

Monoset Powder can be used as a direct substitute for Portland cement in some mortar and concrete applications and with modification during manufacture can be used for both small volume and bulk mixes.

Standard mix designs are shown below; for further information and details on other mix designs consult the Ronacrete Technical Department.

Sand and aggregates used must be clean, well graded and site dry containing not more than 5% moisture. The amount of water added to the mix must be adjusted to compensate for the amount of water in the sand or aggregate.

Dusty aggregates or those with excessive fines must not be used. Sand should conform to grade C or M from Table 5 of BS882:1983; granite or pea shingle aggregates must conform to Table 5 of BS882:1983.

Materials Selection Guide

APPLICATION	GRADE	MIN/MAX DEPTH PER LAYER	DESCRIPTION/SUPPLY	SEE WORKING INSTRUCTIONS
bedding mortar for raising manhole frames and ironwork	Monoset Mortar	10mm/50mm	supplied ready to use; add water	A
bedding mortar for raising manhole frames and ironwork	Monoset 241	10mm/50mm as mortar 25mm/150mm as concrete	supplied as concentrate powder; add sand or aggregate to make mortar or concrete; add water	A
bedding and haunching concrete for manhole frames	Monoset Concrete; Monoset 241(see above)	25mm/150mm	supplied ready to use; add water	A
repairs to floors, roads, carriageways, hard standings, fill potholes; 2mm to 6mm deep	Monoset RXT; bond with Monoset Primer	2mm/6mm	light to medium duty areas; supplied ready to use with gauging liquid	B
repairs to floors, roads, carriageways, hard standings, fill potholes; 6mm to 50mm deep	Monoset RX; bond with Monoset Primer	6mm/50mm	medium duty areas; supplied ready to use with gauging liquid	B
repairs to floors, roads, carriageways, hard standings, fill potholes; 12mm to 50mm deep	Monoset RXG; bond with Monoset Primer	12mm/50mm	heavy duty areas; supplied ready to use with gauging liquid	B
repairs to floors, roads, carriageways, hard standings, fill potholes; 26mm to 150mm deep	Monoset Concrete RX	26mm/150mm	heavy duty areas; supplied ready to use with gauging liquid	B
rapid set concrete; 50mm - 150mm deep	Monoset Concrete	50mm/150mm	use Modified grade for machine mixing; supplied ready to use; add water	B
bedding mortar for kerbs, bricks and copings, typical bed depth 10mm	Monoset RX; bond with Monoset Primer	6mm/50mm	supplied ready to use with gauging liquid	C

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YIELDS			
	Pack Size	**Yield (approx)**	**Coverage (approx)**
Monoset Mortar[180]	25kg	90 packs per m^3	0.5m^2 @ 20mm
Monoset Concrete[180]	25kg	95 packs per m^3	0.45m^2 @ 25mm
Monoset Concrete RX[180]	28kg	95 packs per m^3	0.4m^2 @ 25mm
Monoset RX[180]	28kg	90 packs per m^3	1m^2 @ 11mm
Monoset RXG[180]	28kg	92 packs per m^3	0.95m^2 @ 12mm
Monoset RXT	30kg	90 packs per m^3	2m^2 @ 5mm
Monoset 241	25kg	90 packs per m^3	0.5m^2 @ 20mm
Monoset Powder[180]	25kg	400-500kg/m^3 (see Monoset Powder mix design)	-
Monoset Primer	2kg, 10kg	3-4m^2, 15-20m^2	-
[180] denotes Monoset 180 grade available			

MONOSET POWDER MIX DESIGNS				
	MIX 1 MORTAR MIXES	**MIX 2 CONCRETE MIXES**	**MIX 3 THIN SECTION MORTAR MIXES**	**MIX 4 GRANOLITHIC MIXES**
Monoset Powder[180]	5kg	5kg	5kg	5kg
medium grade sharp sand	15kg	10kg	15kg	7.5kg
10-5mm pea shingle	-	10kg	-	-
6-3mm granite chips				7.5kg
Monoset Gauging Liquid	-	-	2 litres	2 litres
clean potable water	not more than 2 litres	not more than 2 litres	-	-
Yield (approx) m^3	0.01	0.0125	0.01	0.011
[180] denotes Monoset 180 grade available				

PROPERTIES OF CURED MORTARS									
RESULTS ARE IN N/MM²; 100mm CUBES TESTED AT 20°C. SITE MIXED CUBES WILL PRODUCE LOWER STRENGTHS	DESIGNED FOR WEARING SURFACE	MIN DEPTH PER LAYER	MAX DEPTH PER LAYER	1 HOUR COMPRESSIVE STRENGTH	2 HOUR COMPRESSIVE STRENGTH	24 HOUR COMPRESSIVE STRENGTH	7 DAY COMPRESSIVE STRENGTH	28 DAY COMPRESSIVE STRENGTH	WATERPROOF FROSTPROOF
Monoset Mortar	no	20mm	50mm	12	18	30	45	55	no
Monoset Concrete	yes	25mm	150mm	14	20	35	50	58	no
Monoset Concrete RX	yes	25mm	150mm	17	21	29	42	54	yes
Monoset RX	yes	6mm	50mm	12	15	28	40	53	yes
Monoset RXG	yes	12mm	50mm	15	20	29	44	58	yes
Monoset RXT	yes	2mm	6mm	8	16	26	38	51	yes

FLOOR REPAIR GRADES SELECTION TABLE			
depth	product	min. depth per layer	max. depth per layer
6mm-40mm	Monoset RX 180	6mm	50mm
12mm-50mm	Monoset RXG 180	12mm	50mm
26mm-150mm	Monoset Concrete RX 180	25mm	100mm
50mm-150mm	Monoset Concrete 180	25mm	100mm

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