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Property of fresh and harden concrete by using dolomite as the replacement of coarse aggregate

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Abstract : This study has been undertaken to investigate the determinant sedimentary rock that is made up of marine deposited calcium and magnesium. It may contain tiny fossilized remains of plants and animals. It has a pearly luster, is soft enough to scratch with a knife, and reacts very slowly with acid. It is used in road and bridge construction, buildings and as a dimension stone. Good quality Dolomite is a source for magnesium used as anti-acids Processes of dedolomitisation are related to dolomite and dolomitic limestone aggregates.The mechanismand reactions of dedolomitisation are known and widely describe.Dolomite and limestone are very similar rocks. They share the same color ranges of white-to-gray and white-to-light brown (although other colors such as red, green and black are possible). They are approximately the same hardness and they are both soluble in dilute hydrochloric acid. They are both crushed and cut for use as construction materials and used for their ability to neutralize acids. Dolomite is very common in the rock record but the mineral dolomite is rarely observed forming in sedimentary environments. For this reason it is believed that most dolomites form when lime muds or lime stones are modified by post depositional chemical change.Dolomite originates in the same sedimentary environments as limestone - warm, shallow, marine environments where calcium carbonate mud accumulates in the form of shell debris, fecal material, coral fragments and carbonate precipitates. Dolomite is thought to form when the calcite ($CaCO_3$) in carbonate mud or limestone is modified by magnesium-rich groundwater. The available magnesium facilitates the conversion of calcite intodolomite ($CaMg(CO_3)_2$).

***IndexTerms* - dolomite, sedimentary rock, construction, lime stones, etc.**

I. INTRODUCTION

A sedimentary rock that is made up of marine deposited calcium and magnesium. It may contain tiny fossilized remains of plants and animals. It has a pearly luster, is soft enough to scratch with a knife, and reacts very slowly with acid. It is used in road and bridge construction, buildings and as a dimension stone. Good quality Dolomite is a source for magnesium used as anti-acids Processes of dedolomitisation are related to dolomite and dolomite limestone aggregates. The mechanism and reactions of dedolomitisation are known and widely describe. Dolomite and limestone are very similar rocks. They share the same color ranges of white-to-gray and white-to-light brown (although other colors such as red, green and black are possible). They are approximately the same hardness and they are both soluble in dilute hydrochloric acid. They are both crushed and cut for use as construction materials and used for their ability to neutralize acids. Dolomite is very common in the rock record but the mineral dolomite is rarely observed forming in sedimentary environments. For this reason it is believed that most dolomites form when lime muds or lime stones are modified by post depositional chemical change. Dolomite originates in the same sedimentary environments as limestone - warm, shallow, marine environments where calcium carbonate mud accumulates in the form of shell debris, fecal material, coral fragments and carbonate precipitates. Dolomite is thought to form when the calcite ($CaCO_3$) in carbonate mud or limestone is modified by magnesium-rich groundwater. The available magnesium facilitates the conversion of calcite into dolomite ($CaMg(CO_3)_2$). This chemical change is known as "dolomitization." Dolomitization can completely alter a limestone into a dolomite or partially alter the rock. Dolomite is slightly harder than limestone. Dolomite has a Mohs hardness of 3.5 to 4 and limestone (composed of the mineral calcite) has a hardness of 3. concrete. Most of the properties of concrete depend on cement. Cement is manufactured by calcining argillaceous and calcareous materials at a high temperature. During this process, large amount of CO2 is released in to the atmosphere. India is the second largest producer of cement in the world. It is estimated that the production of one ton of cement results in the emission of 0.8 ton of CO2. The reduction in the consumption of cement will not only reduce the cost of concrete but also the emission of CO2. Dolomite stone obtained by the sedimentary rock forming mineral dolomite can be used as a replacement material for coarse aggregate in concrete up to certain percentage. Dolomite stone has some similar characteristics of cement. Using dolomite stone in concrete can reduce the cost of concrete important constituent material, since it binds the aggregates and resists the atmospheric action. However, manufacturing of cement emits about 0.8 ton of CO2 in to atmosphere for every ton of cement manufactured. Dolomite is a carbonate material composed of calcium magnesium carbonate CaMg $(CO_3)_2$. Dolomite is a rock forming mineral which is noted for its remarkable wet ability and dispensability. Dolomite has a good weathering resistance. Dolomite is a preferred for construction material due to its higher surface hardness and density. Asphalt and concrete applications prefer dolomite as a material due to its higher strength and hardness. By the effective utilization of dolomite stone, the objective of reduction of cost of construction can be met. An attempt has been made to explore the possibility of using dolomite as a replacement material for coarse aggregate .As the different grade of concrete M10,M15, M20 and M25. The Compressive, Split tensile and Flexural strength of the specimens were found on the 7^{th} 14^{th} and 28th days.

Fig 1.1 sedimentary rock minerals dolomite from mevat (Haryana)

Dolomite behaves like limestone when it is subjected to heat and pressure. It begins to recrystallize as the temperature rises. As this occurs, the size of the dolomite crystals in the rock increases and the rock develop sadistically crystalline appearance. If you examine the photo below, you will see that the rock is composed of easily recognizable dolomite crystals. The coarse crystalline texture is a sign of recrystallization, most often caused by metamorphism. Dolomite that has been transformed into a metamorphic rock is called "dolomitic marble."Three types of dolomite rock can be distinguished. The most common type of dolomite rock is a former limestone that was dolomitize. These dolomite rocks are often referred to as secondary dolomites, especially in the older literature. Dolomitization means that calcium carbonate (minerals aragonite or calcite — the main constituent of limestone) were replaced by calcium magnesium carbonate (mineral dolomite) through the action of magnesium-bearing water percolating the limestone or limy mud. Dolomite may precipitate out of aqueous solutions (sandstones with a dolomitic cement) and some dolomitic rocks are so-called primary dolomites. These were formed in lagoons where dolomite directly precipitates out of saline seawater, but such dolomites are much rarer than previously thought. Primary dolomite deposition is known only from few cases of Holocene (last 12,000 years) age. It is possible that primary dolomites were somewhat more widespread in the past, but this hypothesis is difficult to prove or reject because of later digenetic (processes affecting sediment after deposition) overprinting of original material. However, it seems very hard to believe that primary dolomite deposition was once the dominant way how dolomitic rocks were formed because laboratory experiments have shown that dolomite does not precipitate from aqueous solutions at the atmospheric conditions (pressure 1 atm, temperature below 60 °C)[4].

Fig 1.2 dolomite stone

Dolomite is basic refractory raw material and consists of a mixture of calcium carbonate ($CaCO3$) and magnesium carbonate ($MgCO3$) Dolomite is a naturally occurring mineral with abundant reserves around the importance in the steel-making industry due to its high thermo mechanical and erosion wear properties China has almost 40 years' experience in employing MgO to compensate the thermal shrinkage of mass concrete since the effects of periclase contained in cement on the compensation of concrete shrinkage was discovered by accident in Bashan dam in the 1970s. Cracking occurs when concrete materials undergo restrained volumetric shrinkage, which has detrimental effects on the mechanical properties and durability of concrete materials and therefore reduce the service life of concrete structures. Shrinkage cracking occurs in constructions frequently. The cracks would be the pathway of water and harmful substances into concrete resulting in destruction of concrete. Different methods were developed to eliminate the shrinkage cracking. One of these methods is using expansive agents to compensate the shrinkage of concrete. The expansion based on CaO, MgO have been studied. When in contact with water, the kinetics of MgO dissolution strongly depends on the concentration of surface defects of the MgO crystals, such that the less defects the MgO crystals have, the slower the hydration. Under the high temperature of cement clinker production, _1450 _C, the crystal structure of MgO becomes well developed,

Literature Review

R.Jayasankaret al.(2010) in this research the compressive strength of cube made with three waste materials namely RHA, fly ash and egg shells at different mixing of three materials after 7 and 28 days was observed. It can be concluded that RHA, Fly ash and ESPmixed cubes has equal strength with that of conventional concrete cubes in certaincategories. M20 and M25 cubes takes equal load compared to conventional concrete. AndM30 grade concrete's load carrying capacity is slightly decreased. Therefore it can beconcluded that RHA, Fly ash and ESP mixed cubes when added with the grades aboveM25 may results in the decrease of the strength level.

DeepaBalakrishnan S and Paulose K.C (2013) carried out an investigation on the workability andstrength characteristics of self compacting concrete containing fly ash and dolomite powder. They madehigh volume fly ash self compacting concrete with 12.5percent, 18.75percent, 25percent and 37.5percentof the cement (by mass) replaced by fly ash and 6.25percent, 12.5percent and 25percent of the cementreplaced by dolomite powder. The test results for acceptance characteristics of self compacting concrete such as slump flow test, J-ring test, V-funnel test and L-box test were presented. The mixes were then tested for other mechanical properties like, cube compressive strength at 7th day, 28th day and 90^{th}day, cylinder compressive strength at 28th day, split tensile strength, and flexural strength at 28th day. Forall levels of cement replacement, concrete achieved superior performance in the fresh and hardened stateswhen compared with the reference mixture.

Tiwari Darshita1, Patel Anoop(2012)Concrete is the most indisputable and indispensable material being used in infrastructure development throughout the world.Umpteen varieties of concretes were researched in several laboratories and brought to the field to suit the specific needs. Although, natural fine aggregates.The replacement of fine aggregate by crushed brick powder is found to be very effective. The optimum replacement is found to be 20% at which the strength of concrete at 3 days, 7 days & 28 days are higher than those of concrete prepared without replacement of sand. Even at 30% replacement of sand, there is a marginal decrease in the achieved strength at 3, 7 & 28 days. The target strength is 26.6 MPa for M-20 grade of concrete whereas at 28 days, the achieved strength is 25.10 MPa, thus, there is a deficiency of only 5.6%. The target strength is 31.6\ MPa for M-25 grade of concrete whereas at 28 days, the achieved strength is 28.5 MPa, thus there is a deficiency of only 9.81%. The target strength is 38.25 MPa for M-30 grade of concrete, whereas at 28 days the achieved strength is 37.40 MPa

Bhavin k, et al (2013) presented the details of the investigation carried out on paver blocks made withcement, dolomite block and different percentages of polypropylene fibres. They reported that addition of 0.3% and 0.4% of polypropylene fibres improved the abrasion resistance and flexural strength of paver block.

SalimBarbhuiya (2011) carried out an investigation to explore the possibilities of using dolomite powder for the production of SCC. Test results indicated that it is possible to manufacture SCC using fly ash and dolomite powder. The mix containing fly ash and dolomite powder in the ratio 3:1 was found to satisfy the requirements suggested by the European Federation of Producers and Contractors of Specialist Products for Structures (EFNARC) guidelines for making SCC. Compressive strengths of SCC with 75% flyash and 25% dolomite powder was found to be satisfactory for structural applications.

Jayarama (2014) A study is conduct to determine the engineering properties viz. Compressive Strength, tensile strength and water absorption capacity of the partially replacement of river sand and ordinary Portland cement . The Samples of concrete (eg.cubesand cylinders) are made in three different grades, namely: M15, M20 and M25. It was found that 0.50 water/cement ratio produced higher compressive strengths, tensile strength and better workability for M25 mix, proportion. Specifically compressive, tensile strength and flexural strength ranged from 18.14–36.72 N/mm2, 10.76-18.5N/mm2 and 12.21- 40.08 N/mm2 for the mixes considered. These results compare favourably with those of conventional concrete.

MATERIALS AND METHOD

3.1 Materials

The following materials were used in the experimental investigation described.

3.1.1 Cement

Cement used was ordinary Portland cement 43 grade as per (IS 12269-1987).It is called 43 grade cement, and if the strength is not less than 43MPa.The 43 OPCGrade Cement is the popular Brand Cement with low heat of hydration and long life of Concrete Structures. The manufacturing of OPCis decreasing all over the world in view of popularity of blended cement on account of lower energy consumption environmental pollution, economic and other technical reasons.The physical properties of OPC 43 grade are as tabulated in table 3.1.

Fig3.1 OPC bag

Table3.1 Physical properties of OPC

Particulars	**Test Results**	**Requirements of IS: 12269-1987**
Normal consistency	36%	38%
Setting time(min) • Initial • Final	30 600	30 600
Specific gravity	3.12	

3.1.2 Water

Water is an important ingredient of concrete as it actively participates in the chemical reaction with cement. Since it helps to form the strength giving cement gel, the quantity and quality of water is required to be looked in to very carefully. Mixing water should not contain undesirable organic substances or inorganic constituents in excessive proportions. In this project, potable water was used for mixing and curing of concrete. The ph value of water used in mixing and curing was in the range of 7.

3.1.3 Aggregate

The fine and coarse aggregate used in making the concrete are as shown in figure 3.2 and 3.3 respectively.

3.1.3Fine aggregate

Locally available fine aggregate is used for the investigation. The fine aggregate was in the form of wet condition, therefore dry it for 24 hours and is sieved using 4.75mm and the fraction passing 4.75mm is used for all experiments. The specific gravity of fine aggregate is determined by density bottle.The physical properties are specific gravity and gradation of fine aggregate as per IS: 383-1970 tested.The specific gravity of fine aggregate is 2.8.Aggregate specific gravity is needed to determine weight-to-volume relationships and to calculate various volume-related quantities. The fine aggregate belongs to zone -II as per IS: 383-1970.

Fig.3.2Fine Aggregate

For the different grade Present investigation,waste dolomite stone was obtained from mebad(Haryana)).The obtained waste dolomite stone was in the form of rock and then crush by the hammer after crush dolomite stone passed from sieve size 20mm.Dolomite is a common rock-forming mineral. It is a calcium magnesium carbonate with a chemical composition of $CaMg(CO_3)_2$.Dolomite is rarely found in modern sedimentary environments but dolostones are very common in the rock record. They can be geographically extensive and hundreds to thousands of feet thick. Most rocks that are rich in dolomite were originally deposited as calcium carbonate muds that were postdepositionally altered by magnesium- rich pore water to form dolomite.

Fig 3.4 dolomite stone

Table 3.2: Physical properties of dolomite

Chemical Classification	**Carbonate**
Color	colorless, white, pink, green, gray, brown, black
Streak	White
Luster	vitreous, pearly
Diaphaneity	transparent to translucent
Cleavage	perfect, rhombohedra, three directions
Mohs Hardness	3.5 to 4
Specific Gravity	2.8 to 2.9
Diagnostic Properties	rhombohedral cleavage, powdered form effervesces weakly in dilute HCl, hardness
Chemical Composition	(CaMg)(CO3)2
Crystal System	Hexagonal
Uses	construction aggregate, cement manufacture, dimension stone, calcined to produce lime, sometimes an oil and gas reservoir, a source of magnesia for the chemical industry, agricultural soil treatments, metallurgical flux

3.2.1 Mixing for M10,M15, M20 and M25 Grade

In this project work, hand mixing was used to different grade of concrete make the concrete of M10 (1: 3: 6),M15(1:2:4),M20(1:1.5:3) and M25(1:1:2) and the compressive strength for each percentage was checked for 7,14 and 28 days. The size of mould in which the concrete is filled was 150×150×150cm^2. Water was used in the mix design as taken in volume. Generally 12 cube of each grade of concrete made by dolomite was made for 7, 14 and28 days

Table 3.4: shows the mixing of concrete

SR.No	Grade of concrete	No of Sample	W/c ratio	Cement in kg	Fine aggregate	Dolomite replace coarse aggregate	Total materials in kg
1.	M10	12	0.50	9.6	28.8	57.6	96
2.	M15	12	0.50	13.7	27.4	54.8	96
3.	M20	12	0.50	17.4	26.1	52.3	96
4.	M25	12	0.50	24.0	24.0	48.0	96

RESULT AND DISCUSSION

4.1GENERAL

Various tests, such compression test, slump test and compacting factor testhave been conducted on fresh and hardened concrete to determine the mechanical properties of concrete.

- Slump test
- Compacting factor test
- Compression test

4.2 Properties of fresh concrete

The slump test and compacting factor test was conducted on fresh concrete with different percentage of w/c ratio as shown in table 4.1 and 4.2 respectively.

Table4.1:Slump concrete grade M15 made by dolomite

SR.NO	W/C ratio	Slump(MM)	Compacting factor
1	.40	0	.81
2	.45	0	.72
3	.50	0	.71
4	.55	20	.70
5	.60	35	.69

The workability of concrete has to be found increase with increase the w/c ratio and compacting factor decrease with increase the w/c ratio, Therefore the workability of fresh normal concrete shows the workable concrete after increase the w/c ratio from .45 to .60 without mixing the concrete grade using by dolomite. It is concluded that the workability of fresh concrete shows the good workability from .55 to .60 w/c ratio,and the workability of concrete shows the zero workability at .40, .45 and .50 therefore the value produced by slump test shows the medium workabilityof concrete.

Table 4.2: Slump test concrete grade M20 made by dolomite

SR.NO	W/c ratio	Slump(MM)	Compacting factor
1	.40	0	.84
2	.45	0	.74

3	.50	0	.73
4	.55	10	.72
5	.60	20	.71

The workability of concrete made with concrete grade M20 made with dolomite stone in concrete has found to be increase with increase the w/c ratio and the compacting factor decrease with increase the w/c ratio. Therefore the workability of concrete made with concrete grade M20 with dolomite decrease when compared with concrete M15 .

4.3 Properties of Hardened Concrete

The compression test was conducted on hardened concrete for 7 and 14th, 28 days. The value of compressive strength is shown in table and graph.

4.3.1 Mix proportions of concrete with different concrete grade made by dolomite

We have cast 48 cubes of concrete with dolomite at different-different concrete grade. 4 cubes from each mix such as cube of dolomite with concrete grade M10,M15,M20 and M25.Each cube was tested for 7 days compressive strength14 days and that for 28 days.

4.3.2 Cube compressive strength of concrete with dolomite after 7 days curing.

The compressive strength test results of concrete with or with dolomite are shown in Tables and Graphs.The compressive strength of 4 cubes (size 150 x 150 x 150 mm) at 7 day age is given in the tables and graphs. The compression load was applied at the rate of 3kN/sec by using a compression machine of capacity of about 2000 Kn.The 7 days compressive strength of concrete cube is shown in table 4.3, 4.4, 4.5, 4.6 and 4.7and also in graph 4.1, 4.2, 4.3 and 4.4 respectively

Table 4.3: 7 days Cube compressive strength of concrete M10 with dolomite

Sample no	Load (kN)	7 days Cube compressive strength M10 grade (MPa)
1.	240.3	10.68
2.	270.4	12.01
3.	230.8	10.25
4.	245.4	10.91

The graphical representation of compressive strength of concrete grade M10 with dolomiteare given as below in graph 4.1.

4.3.5 Combined compressive strength after 7,14 and 28 days

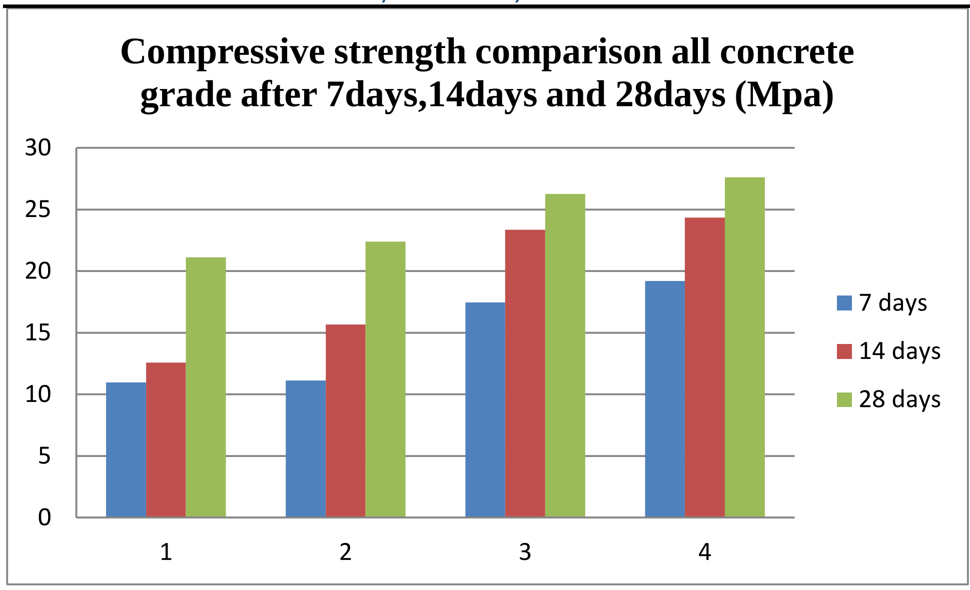
The combined compressive of all cube for 7,14 and 28 days is given below in table 4.16 and graph 4.13

Table 4.16: cube compressive strength of concrete after 7, 14 and 28 days

SR.NO	Grade of concrete	7 days compressive strength in Mpa	14 days compressive strength in Mpa	28 days compressive strength in Mpa
1.	M10	10.96	12.57	21.12
2.	M15	11.13	15.68	22.38
3.	M20	17.45	23.35	26.27
4.	M25	19.19	24.33	27.61

it was found that the compressive strength of concrete cube using dolomite as replacement of coarse aggregate in concrete after 7 days curing compressive strength of concrete grade M10 is increased with dolomite 10.96Mpa grade of concrete M10 after 14 days compressive strength is 12.97Mpa. grade of concrete M10 after 28 days is 21.12Mpa.concrete grade M15after 7 days curing compressive strength is 11.13Mpa using by dolomite as the replacement of coarse aggregate. After 14 days compressive strength of concrete grade M15 is 15.68 Mpa. after 28 days compressive strength is 22.38Mpa.compressive strength of concrete grade M20 after 7days 17.45Mpa. after 14 days compressive strength 23.35Mpa. after 28 days compressive strength 26.27Mpa.compressive strength of concrete grade M25 using dolomite stone as the replacement of coarse aggregate in concrete after 7 dayscuring 19.19Mpa. Compressive strength after 14 days curing 24.33Mpa.compressive strength of concrete grade M 25 after 28 days curing 27.61Mpa using by dolomite in concrete

The graphical representation of compressive strength of concrete with dolomite after 7 and 28 days are given as below in graph 4.13



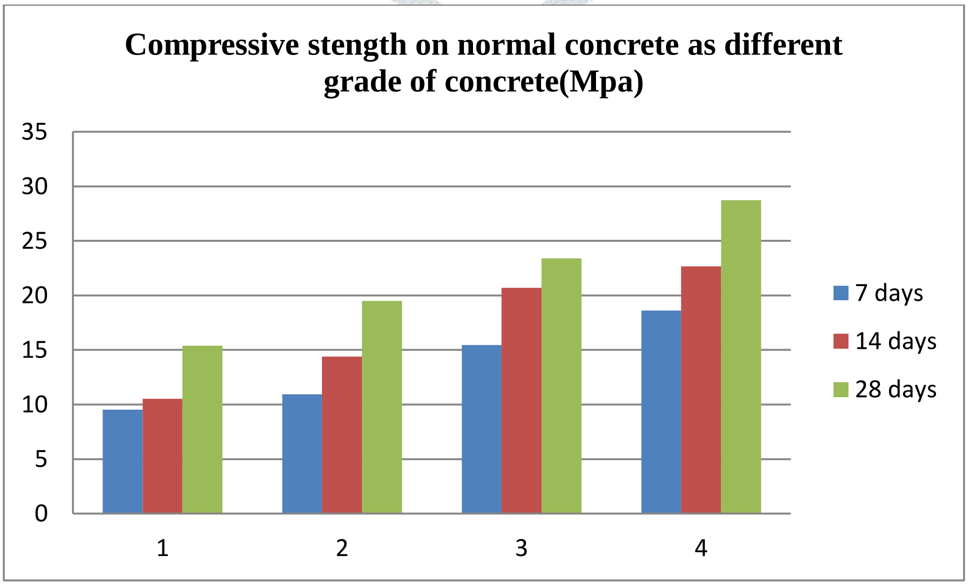
Graph 4.13: Cube compressive strength of concrete after 7, 14 and 28 days

1.4.1 Normal concrete compressive strength with concrete grade M10, M15, M20 and M25 after 7 days, 14 days and 28 days.

Table 4.16: cube compressive strength of concrete after 7, 14 and 28 days

SR.NO	Grade of concrete	7 days compressive strength in Mpa	14 days compressive strength in Mpa	28 days compressive strength in Mpa
1.	M10	9.54	10.52	15.39
2.	M15	10.94	14.39	19.49
3.	M20	15.45	20.69	23.39
4.	M25	18.63	24.67	28.74

The graphical representation of compressive strength of concrete with grade M10, M15, M20 and M25 by dolomite are given as below in graph 4.10



Graph 4.13: Cube compressive strength of normal concrete after 7, 14 and 28 days

it was found that the compressive strength of normal concrete cube using in concrete after 7 days curing compressive strength of concrete grade M10 is decrease with normal concrete is 9.54Mpa grade of concrete M10 after 14 days compressive strength is 10.52Mpa. grade of concrete M10 after 28 days is 15.39Mpa.concrete grade M15after 7 days curing compressive strength is 10.94Mpa as normal concrete. After 14 days compressive strength of concrete grade M15 is 14.39Mpaafter 28 days compressive strength is 19.49Mpa.compressive strength of concrete grade M20 after 7days 15.45Mpa. after 14 days compressive strength 20.69Mpa. after 28 days compressive strength 23.39Mpa.compressive strength of concrete grade M25 in normal concrete after 7 days curing 18.63Mpa. Compressive strength after 14 days curing 22.67Mpa.compressive strength of concrete grade M25 after 28 days curing 28.74Mpa using by normal concrete

4.3.4: Comparison of compressive strength after 7 days, 14 days, 28 days between all the samples of concrete with different concrete grade made by dolomite and normal concrete

it was found that the compressive strength of concrete cube after 7 days curing increased with grade of concrete using with dolomite as the replacement of coarse aggregate in concrete .compressive strength of concrete grade M10,M15,M20 increase compressive strength comparison to normal concrete cube after 7days ,14days and 28 days curing.concrete grade M25compressive strength decrease comparison to normal concrete

(a)Effect of dolomite on 7 days on normal concrete

The 7 days compressive test result show that the addition of dolomite in concrete gradeM10 compressive strength 1.42Mpa increase comparison to normal concrete.grade of concrete M15 using dolomite as the replacement of coarse aggregate in concrete after 7 days compressive strength 0.19Mpaincreased comparison to normal concrete.compressive strength of concrete grade M20is increase 2.00Mpacomparison to normal concrete. After 7 days compressive strength of concrete grade M25 using by dolomite 0.56Mpa increase comparison to normal concrete

(b)Effect of dolomite on 14days on normal concrete

The 14 days compressive test result show that the addition of dolomite in concrete gradeM10 compressive strength 1.95Mpa increase comparison to normal concrete.grade of concrete M15 using dolomite as the replacement of coarse aggregate in concrete after 14 days compressive strength 1.29Mpaincreased comparison to normal concrete.compressive strength of concrete grade M20 is increase 2.66Mpa comparison to normal concrete. After 14 days compressive strength of concrete grade M25 using by dolomite 0.35Mpa decrease comparison to normal concrete

(c)Effect of dolomite on 28 days on normal concrete

The 28 days compressive test result show that the addition of dolomite in concrete gradeM10 compressive strength 5.73Mpa increase comparison to normal concrete .grade of concrete M15 using dolomite as the replacement of coarse aggregate in concrete after 28 days compressive strength 2.89Mpaincreased comparison to normal concrete. compressive strength of concrete grade M20 is increase 2.88Mpa comparison to normal concrete. After 28 days compressive strength of concrete grade M25 using by dolomite 1.13Mpa decrease comparison to normal concrete

CONCLUSION

Based on experiments and test results on fresh & hardened concrete the following conclusion is drown.

- The workability of concrete made without dolomite has found to be increased with increase the w/c ratio.
- The compacting factor of fresh concrete made without dolomite has found to be decreased with increase w/c ratio
- The workability of concrete grade M10 made with dolomite in concrete decreased with increase the w/c cement ratio.
- The compressive strength of concrete grade M10 made with dolomite after 7 days curing was 1.42Mpa higher when compared with normal concrete after 7 days.
- The compressive strength of concrete grade M15 made with dolomite after 7 days curing was incease0.19Mpa compared with normal concrete after 7 days.
- The 7 days compressive strength of concrete grade M20 made with dolomite has curing was 2.00Mpa higher with compared to normal concrete.
- The 7 days compressive strength of concrete grade M25 made with dolomite has found to be increase 0.50Mpa something average value compared with normal concrete after 7 days.
- The 14 days compressive strength of concrete grade M10 made with dolomite has found 1.95Mpa higher when compared the normal concrete after 14 days.
- The 14 days compressive of concrete grade M15made with dolomite has to be found 1.29Mpa higher with compare to normal concrete.
- The 14 days compressive strength of concrete grade M20made with dolomite has to be found 2.66Mpa higher with compare to normal concrete.
- The 14 days compressive of concrete grade M25made with dolomite has to be found 0.35Mpa decrease with compare to normal concrete.
- The 28days compressive strength of concrete grade M10made with dolomite has to be found 5.73Mpa higher with compare to normal concrete.
- The 28days compressive strength of concrete grade M15made with dolomite as the replacement of coarse aggregate has to be found 2.89Mpa higher with compare to normal concrete.
- The 28days compressive strength of concrete grade M20made with dolomite has to be found 2.88Mpa higher with compare to normal concrete.
- The 28days compressive strength of concrete grade M25 made with dolomite as the replacement of coarse aggregate has to be found 1.13Mpa decrease with compare to normal concrete.
- As the dolomite is waste material, it reduce the cost of construction.
- It helps in reducing the pollution in environmental.

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