CLS 1.4

PREMIXED STRUCTURAL CONCRETE LIGHTENED WITH HOLLOW GLASS SPHERES ANTI SHRINKAGE AND TYPE "R" AT QUICK DRY
Compliant with UNI EN 206-1

DESCRIPTION
Premixed lightened structural concrete anti shrinkage compliant with UNI EN 206-11 with resistance class LC 20/22, based on hydraulic binders and hollow glass spheres, for interiors and exteriors with an high and constant quality level, produced with an automated system, to apply by mechanical projection or by hand to realize lightened structural concretes in general. It does not attack the metals but protects them if enfolds them completely.

COMPOSITION
Special cements sulphate-resistant, glass spheres, selected calcareous aggregates with grading from 0 to 3 mm, natural additives tested for the specific use which give to the product a very high adhesion and workability.

ADDITIVES
Additives just give to the product an excellent workability, thixotropicity and water retention to give to the product a controlled shrinkage, avoiding on this way physical trauma as cracks and consequent partial detachments from the substrate. They just have an active part in the working process, when the product is mature no longer have any active effect. Do not form films so the breathability remains the same as the traditional product. They are not toxic and are biodegradable.

FEATURES
An accurate and selective choice of the main materials made with a perfect grading curve, thanks to the use of our own crush system, produce just adding water a lightened structural concrete very plastic and easily workable, specific to realize castings collaboranti and reinforced concrete where is required high resistance and lightness, facilitating the realization of the works themselves also in places that are not accessible with normal concrete mixers.

USE
Structural castings inside and outside.
Reinforcing castings on floors in corrugated sheet or metal in general.
Collaboranti castings on floors in beams/brick, core-concrete, wood.

AVIABILITY
CLS 1.4: Normal dry;
CLS 1.4 R: Quick dry;

APPLICATION
- Prepare the substrates removing dusts, mud, bitumen, oil stains, etc.
- The substrates must be free of detaching parts and suitable to receive reinforced concrete castings. It may be expected, therefore, reinforcements, connections, spacers and/or form release agents.
- To wet, in advance, particularly absorbent or dry or exposed to hot climate substrates.
- To mix in a cement mixer, planetariums, air pumps till when the mixture isn't homogeneous; with a plaster sprayer or with a screw mixer regulating the flow-meter till when the density isn't perfect.
- The mixture must have the consistency of a fluid mortar.
- Doughing time about 3 minutes.
- Min. thickness of application cm 4.
- Respect the water quantity indicated because higher dosages could extend setting times and reduce the compressive strength.
- Don't mix by hand or with an electric mixer.
- Make a vibration-casting to remove gaps and air bubbles.
- CLS 14 is used as a traditional concrete, so use all the technical and experiential rules used with the classic concretes.
- In case of use as composite slab is recommended not to interrupt the casting with plants, pipelines, etc. because there would be a loss of resistance of the slab. The plants must be insert on the finishing screed that can be realized with the lightened screeds "MASSETTI TERMOISOLANTI" line or with the traditional screeds of the "MASSETTI ED AUTOLIVELLANTI" line.
- If used as composite slab without finishing screed, use the same warnings used with the traditional concrete, taking care to ensure a perfect flatness and superficial smoothing, use specific adhesives for concrete type "INTOCOL SS" plus "INTOELASTIC" taking care to use tiles of small sizes and making large leakages, self-leveling products with a low thickness type "INTOALIV", waterproofing products type "INTOIDRO ELS or P or MONO".
- With high temperatures, wind and low humidity, is recommended to protect from the quick dry. In case of application on old or very absorbent substrates and in case of application with a low thickness be particularly careful.
- For concrete castings always insert an electro-welded network (be careful to cut the concrete perpendicularly to the laying surface).
- Can be used a suitable antifreeze additive.
- Not suitable to be insert in silo or cement truck.

CLS 1.4

- Don't appy on frozen substrates, with frost or possible frost in 24 hours.
- Don't appy with strong wind or in very sunny days.
- Don't appy until when the substrate isn't completely dried.
- Don't apply with driving rain.
- Don't add any other material to the product.
- We suggest to apply CLS 1.4 with a temperature between +5 ° C and + 35° C.

PACKAGING
Multi-ply paper sacks with protective film of kg. 23 on wood pallets of 16,10 ql.(70 sacks).

YIELD
14/15 kg/mq for each cm of thickness.

TECHNICAL SPECIFICATIONS OMPLIANT WITH UNI EN 206-1

	CLS 1.4	CLS 1.4 R
Water content of the mix	~20-22%	~20-22%
Grading EN 1015-1	< 3mm	< 3mm
Specific wieght ± 5% EN 1015-10	1.400 Kg/m³ (Class D 1,5)	1.400 Kg/m³ (Class D 1,5)
Pot life	45 minutes	45 minutes
Can be walked on	12 hours	8 hours
Esposition class UNI EN 206-1	XO-XC1	XO-XC1
Resistance class UNI EN 206-1	LC 20/22	LC 20/22
Cubic compr. strength after 28 days	> 25 N/mm²	> 25 N/mm²
Cylindrical compr. strength after 28 days	> 22,5 N/mm²	> 22,5 N/mm²
Water vapor diff. resistance factor EN 1745	μ=6	μ=6
Modulus of elasticity	E=15.000	E=15.000
Fire reaction EN 13501-1	Class "A1"	Class "A1"
Specific heat EN 1745	1,00 Kj/Kg K	1,00 Kj/Kg K
Thermal conducivity coefficient EN 1745	λ=0,42	λ=0,42

SUMMERY
The lightweight structural concrete for reinforcing castings or for composite castings, will be realized with a premixed lightweight structural concrete anti-shrinkage based on special cements sulphate-resistant and glass spheres, type "CLS 1.4" or at quick dry "CLS 1.4 R" compliant with UNI EN 206-11 with resistance class LC 20/22 by MALVIN S.r.l., applied by hand or mechanically and to mix just adding water, with a consumption of 14/15 kg/mq for each cm of thickness, with a compressive strength after 28 days LC 20/22 ≥ 25 N/mm².

The performance characteristics refer to laboratory tests, values depend on the weather conditions and on the methods of implementations. The operator must verify the suitability of the product depending on the use planned.

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CLS 1.6

PREMIXED STRUCTURAL CONCRETE LIGHTENED WITH HOLLOW GLASS SPHERES ANTI-SHRINKAGE AT HIGH RESISTANCE
Compliant with UNI EN 206-1

DESCRIPTION
Premixed lightened structural concrete anti shrinkage with high resistance compliant with UNI EN 206-11 with resistance class LC 30/33, based on hydraulic binders and glass spheres, for interiors and exteriors with an high and constant quality level, produced with an automated system, to apply by mechanical projection or by hand for the realization of lightened structural concrete in general. Does not attack metals but protects them if enfolds them completely.

COMPOSITION
Special cements sulphate-resistant, glass spheres, selected calcareous aggregates with grading from 0 to 3 mm, natural additives tested for the specific use which give to the product a very high adhesion and workability.

ADDITIVES
Additives just give to the product excellent features for the workability, thixotropicity and water retention to give to the product a controlled shrinkage, avoiding on this way trauma physical as cracks and consequent partial detachments from the substrate They just have an active part in the working process, when the product is mature no longer have any active effect. Do not form films so the breathability remains the same as the traditional product. They are not toxic and are biodegradable.

FEATURES
An accurate and selective choice of the main materials made with a perfect grading curve, thanks to the use of our own crush system, produce just adding water a lightened structural concrete very plastic and easily workable, specific to realize getti collaboranti and reinforced concrete when is required an high resistance and lightness, facilitating the realization of the works themselves also in places that are not accessible with normal concrete mixers.

USE
Internal and external structural castings.
Concrete in general with high resistance and lightness.
Collaboranti castings on floors in beams/brick, core-concrete, wood.

APPLICATION
- Prepare the substrates removing dusts, mud, bitumen, oil stains, etc.
- The substrates must be free of detaching parts and suitable to receive reinforced concrete castings. It may be expected, therefore, reinforcements, connections, spacers and/or form release agents.
- To wet, in advance, particularly absorbent or dry or exposed to hot climate substrates.
- To mix in a cement mixer, planetariums, air pumps till when the mixture isn't homogeneous; with a plaster sprayer or with a screw mixer regulating the flow-meter till when the density isn't perfect.
- The mixture must have the consistency of a fluid mortar.
- Doughing time about 3 minutes.
- Min. thickness of application cm 4.
- Respect the water quantity indicated because higher dosages could extend setting times and reduce the compressive strength.
- Don't mix by hand or with an electric mixer.
- Make a vibration-casting to remove gaps and air bubbles.
- CLS 14 is used as a traditional concrete, so use all the technical and experiential rules used with the classic concretes.
- In case of use as composite slab is recommended not to interrupt the casting with plants, pipelines, etc. because there would be a loss of resistance of the slab. The plants must be insert on the finishing screed that can be realized with the lightened screeds "MASSETTI TERMOISOLANTI" line or with the traditional screeds of the "MASSETTI ED AUTOLIVELLANTI" line.
- If used as composite slab without finishing screed, use the same warnings used with the traditional concrete, taking care to care to ensure a perfect flatness and superficial smoothing, use specific adhesives for concrete type "INTOCOL SS" plus "INTOELASTIC" taking care to use tiles of small sizes and making large leakages, self-levelling products with a low thickness type "INTOALIV", waterproofing products type "INTOIDRO ELS or P or MONO".
- With high temperatures, wind and low humidity, is recommended to protect from the quick dry. In case of application on old or very absorbent substrates and in case of application with a low thickness be particularly careful.
- For concrete castings always insert an electro-welded network (be careful to cut the concrete perpendicularly to the laying surface).
- Can be used a suitable antifreeze additive.
- Not suitable to be insert in silo or cement truck.

CLS 1.6

- Don't appy on frozen substrates, with frost or possible frost in 24 hours.
- Don't appy with strong wind or in very sunny days.
- Don't appy until when the substrate isn't completely dried.
- Don't appy with driving rain.
- Don't add any other material to the product.
- We suggest to apply CLS 1.6 with a temperature between +5 ° C and + 35° C.

PACKAGING
Multi-ply paper sacks with protective film of kg. 24 on wood pallets of 16,80 ql. (70 sacks).

YIELD
16/17 kg/mq for each cm of thickness.

TECHNICAL SPECIFICATIONS COMPLIANT WITH UNI EN 206-1

Water content of the mix	**~20-22%**
Grading EN 1015-1	**< 3mm**
Specific wieght ± 5% EN 1015-10	**1.600 Kg/m³ (Class D 1,5)**
Pot life	**45 minutes**
Can be walked on	**12 hours**
Esposition class UNI EN 206-1	**XO-XC1-XC2-XF2**
Resistance class UNI EN 206-1	**LC 30/33**
Cubic compr. strength after 28 days	**> 35 N/mm²**
Cylindrical compr. strength after 28 days	**> 31,5 N/mm²**
Water vapor diff. resistance factor EN 1745	**μ=6**
Modulus of elasticity	**E=20.000**
Fire reaction EN 13501-1	**Class "A1"**
Specific heat EN 1745	**1,00 Kj/Kg K**
Thermal conducivity coefficient EN 1745	**λ=0,54**

SUMMARY
The lightweight structural concrete for reinforcing castings, will be realized with premixed structural lightweight concrete anti shrinkage at high resistance based on special cements sulphate-resistant and glass spheres, type "CLS 1.6" compliant with UNI EN 206-1 with resistance class LC 30/33 by MALVIN S.r.l., applied by hand or mechanically and to mix just adding water, with a consumption of 16/17 kg/mq for each cm of thickness, with a compressive strength after 28 days of LC 30/33 ≥ 35 N/mm².

The performance characteristics refer to laboratory tests, values depend on the weather conditions and on the methods of implementations. The operator must verify the suitability of the product depending on the use planned.

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CLS 1.8

HIGH PERFORMANCE PREMIXED STRUCTURAL CONCRETE LIGHTENED WITH HOLLOW GLASS SPHERESS FIBER REINFORCED ANTI SHRINKAGE
Compliant with UNI EN 206-1

DESCRIPTION
High-performance premixed lightened structural concrete anti shrinkage compliant with UNI EN 206-1 with resistance class LC 40/44, fiber reinforced with a special composition of polypropylene, fibers based on hydraulic binders and hollow glass spheres, for interiors and exteriors with an high and constant quality level, produced with an automated system, to apply by mechanical projection or by hand to realize lightened structural concretes in general. It does not attack the metals but protects them if enfolds them completely.

COMPOSITION
Special cements sulphate-resistant, hollow glass spheres, selected calcareous aggregates with grading from 0 to 3 mm, polypropylene fibers 40x12x0,2 mm, natural additives tested for the specific use which give to the product a very high adhesion and workability.

ADDITIVES
Additives just give to the product an excellent workability, thixotropicity and water retention to give to the product a controlled shrinkage, avoiding on this way physical trauma as cracks and consequent partial detachments from the substrate. They just have an active part in the working process, when the product is mature no longer have any active effect. Do not form films so the breathability remains the same as the traditional product. They are not toxic and are biodegradable.

FEATURES
An accurate and selective choice of the main materials made with a perfect grading curve, thanks to the use of our own crush system, produce just adding water a lightened structural concrete very plastic and easily workable, specific to realize castings collaboranti and reinforced concrete where is required high resistance and lightness, facilitating the realization of the works themselves also in places that are not accessible with normal concrete mixers.

USE
Structural castings inside and outside.
Reinforcing castings on floors in corrugated sheet or metal in general.
Concrete in general with lightness and high strength.
Collaboranti castings on floors in beams/brick, core-concrete, wood.

APPLICATION
- Prepare the substrate removing dusts, mud, bitumen, oil stains, etc.
- The substrates must be free of detaching parts and suitable to receive reinforced concrete castings. It may be expected, therefore, reinforcements, connections, spacers and/or form release agents.
- Wet, in advance, particularly absorbent or dry or exposed to hot climate substrates.
- To mix in a cement mixer, planetariums, air pumps till when the mixture isn't homogeneous; with a plaster sprayer or with a screw mixer regulating the flow-meter till when the density isn't perfect.
- The mixture must have the consistency of a fluid mortar.
- Doughing time about 3 minutes.
- Min. thickness of application cm 4.
- Respect the water quantity indicated because higher dosages could extend setting times and reduce the compressive strength.
- Don't mix by hand or with an electric mixer.
- Make a vibration-casting to remove gaps and air bubbles.
- CLS 1.8 is used as a traditional concrete, so use all the technical and experience rules used with the classic concretes.
- If used as composite slab is recommended not to interrupt the cast with plants, pipeline etc. because there will be a loss of resistance of the composite slab. The plants must be incorporated on the finishing screed that can be realized with the lightened screeds by the "MASSETTI TERMOISOLANTI" line or with the traditional screeds by the "MASSETTI ED AUTOLIVELLANTI" line.
- If used as composite slab without finishing screed, use the same warnings used with the traditional concrete, taking care to ensure a perfect flatness and superficial smoothing, use specific adhesives for concrete type "INTOCOL SS" plus "INTOELASTIC" taking care to use tiles in small sizes and making large leakages, waterproofing products type "INTOIDRO ELS or P or MONO".
- With high temperatures, wind and low humidity, is recommended to protect from the quick dry. In case of application on old or very absorbent substrates and in case of applications with a low thickness be very careful at the quick dry.
- For bonding always insert a welded network (taking care to cut the concrete perpendicular to the laying surface).
- Can be used a suitable antifreeze additive.
- Can't be insert in silo or in a cement truck.

CLS 1.8

- Don't apply on frozen substrates, with frost or possible frost in 24 hours.
- Don't apply in with strong wind or in very sunny days.
- Don't apply till when the substrate isn't completely dried.
- Don't apply with driving rain.
- Don't add any other material to the product.
- We suggest to apply CLS 1.8 with a temperature between +5 ° C and + 35° C.

PACKAGING
Multi-ply paper sacks with protection of kg. 25 on wood pallets of 17,50 ql.(70 sacks).

YIELD
18/19 kg/mq for each cm of thickness.

TECHNICAL SPECIFICATIONS COMPLIANT WITH UNI EN 206-1

Water content of the mix	**~20-22%**
Grading EN 1015-1	**< 3mm**
Specific wieght ± 5% EN 1015-10	**1.800 Kg/m³ (Class D 1,5)**
Pot life	**45 minutes**
Can be walked on	**12 hours**
Esposition class UNI EN 206-1	**XO-XC1-XC2-XC3-XC4 XD1-XD2 XD3-XS1-XS2-XS3-XF1-XF2-XF3 XF4-XA1-XA2-XA3**
Resistance class UNI EN 206-1	**LC 40/44**
Cubic compr. strength after 28 days	**> 45 N/mm²**
Cylindrical compr. strength after 28 days	**> 40,5 N/mm²**
Water vapor diff. resistance factor EN 1745	**μ=6**
Modulus of elasticity	**E=25.000**
Fire reaction EN 13501-1	**Class "A1"**
Specific heat EN 1745	**1,00 Kj/Kg K**
Thermal conducivity coefficient EN 1745	**λ=0,70**

SUMMARY
The lightweight structural concrete for casting reinforcement or for casting jets, will be realized with premixed high performance lightweight structural concrete anti shrinkage, fiber reinforced with a special composition of fibers tested for the specific use, based on special cements sulphate-resistant and glass spheres, type "CLS 1.8" compliant with UNI EN 206-1 with resistance class LC 40/44 by MALVIN S.r.l., applied by hand or mechanically and to mix just adding water, with a consumption of 18/19 kg/mq for each cm of thickness, with compressive strength after 28 days LC 40/44 ≥ 45 N/mm².

The performance characteristics refer to laboratory tests, values depend on the weather conditions and on the methods of implementations. The operator must verify the suitability of the product depending on the use planned.

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