



LOW CARBON BUILDINGS

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SUSTAINABILITY



We started long ago

INTERNATIONAL
Realtà Mapei

**No need
for greenwashing**

To develop eco-sustainable products, you cannot wash them green. You have to invest in research and have your products certified by internationally recognized institutions.
Mapei's long-lasting commitment to environment results in plenty of products which have been awarded international certifications and contribute to achieving eco-sustainable buildings.

View RM - No. 32 - September 2010



RM INTERNATIONAL 2010

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QUALITY = DURABILITY

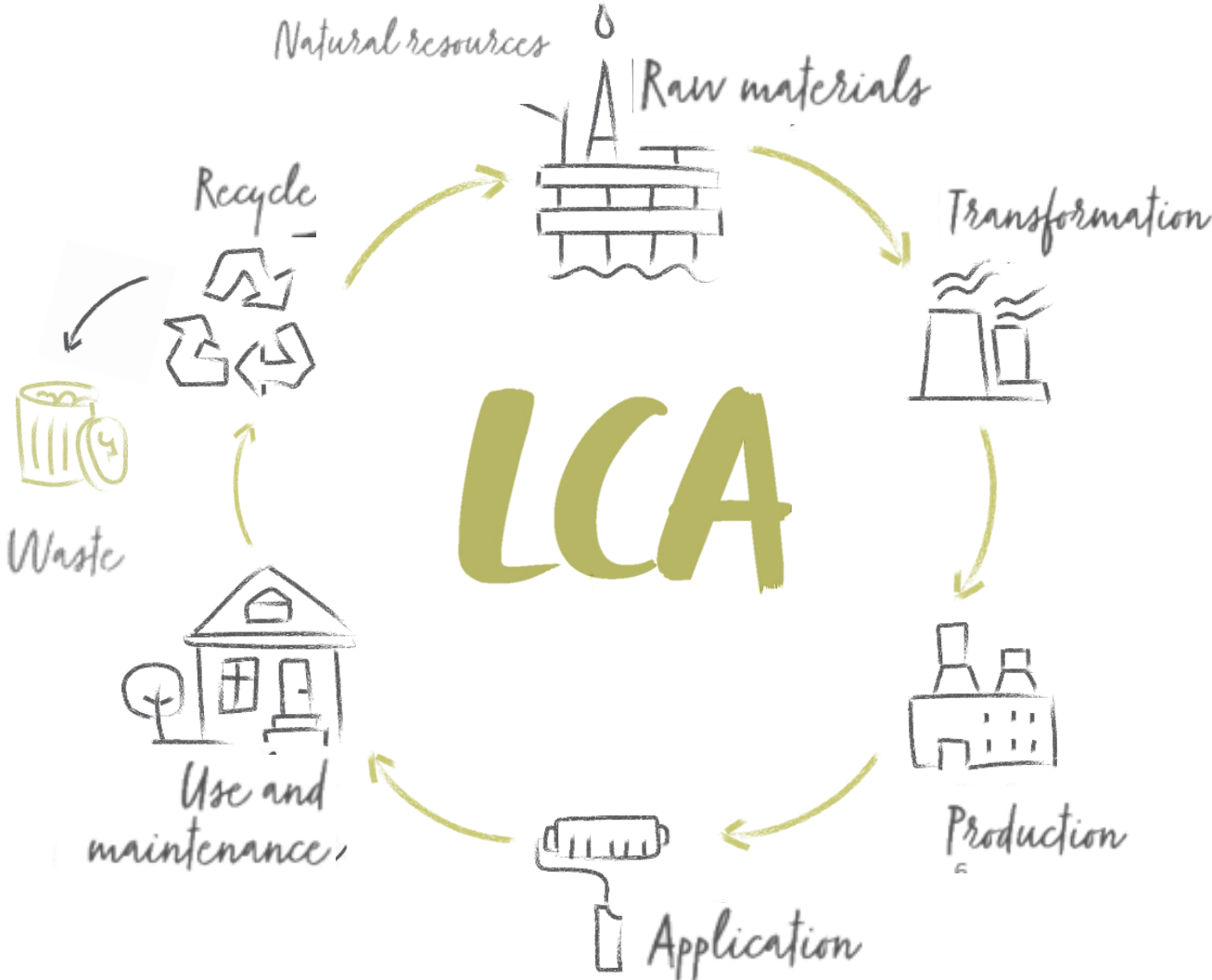
LCA & ECO DESIGN

CO₂ OFFSET

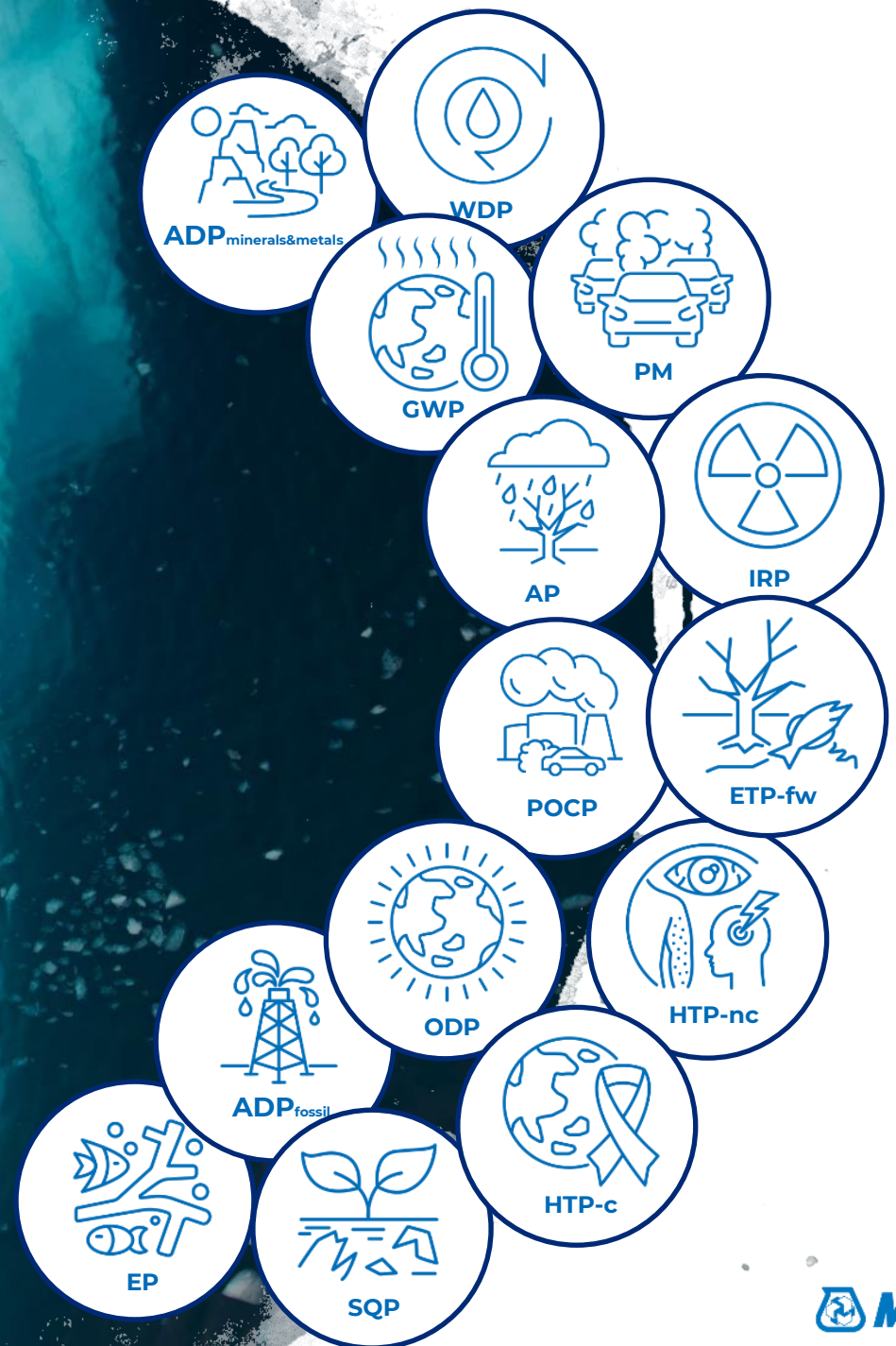
**INDOOR
ENVIRONMENTAL
QUALITY**

SUSTAINABLE PRODUCTS

LCA: LIFE CYCLE ASSESSMENT



ENVIRONMENTAL IMPACT CATEGORIES





CARBON FOOTPRINT

=

**GLOBAL WARMING
POTENTIAL**

[kg CO₂-eq]

EPD

PRODUCT-SPECIFIC



ENVIRONMENTAL PRODUCT DECLARATION

*In accordance with ISO 14025 and
EN 15804:2012+A2:2019/AC:2021 for:*

MAPECUBE 60W



An EPD should provide current information and may be updated if conditions change. The stated validity is, therefore, subject to the continued registration and publication at www.environdec.com.

Programme: The International EPD® System; www.environdec.com	Programme operator: EPD International AB	EPD registration number: S-P-09427	Publication date: 2023-07-07	Valid until: 2023-07-06	Geographical scope: Global
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ENVIRONMENTAL PRODUCT DECLARATION

*In accordance with ISO 14025 and EN
15804:2012+A2:2019/AC:2021 for:*

MAPEFAST 100



ENVIRONMENTAL PRODUCT DECLARATION

*In accordance with ISO 14025 and EN
15804:2012+A2:2019/AC:2021 for:*

DYNAMON SX



An EPD should provide current information and may be updated if conditions change. The stated validity is, therefore, subject to the continued registration and publication at www.environdec.com.

Programme: The International EPD® System; www.environdec.com	Programme operator: EPD International AB	EPD registration number: S-P-08147	Publication date: 2023-04-07	Valid until: 2028-04-06	Geographical scope: Global
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WHY EPDs?



ROBUSTNESS OF THE RESULTS: based on LCA a science-based methodology



RELIABILITY: verified and certified



TRANSPARENCY to the stakeholder



LCA for SUSTAINABLE CONCRETE

CEMENTS



**CONCRETE IS THE SECOND
MOST USED MATERIAL,
AFTER WATER**

PANAMA CANAL OPEN 2016

4,3 MIO m³ concrete



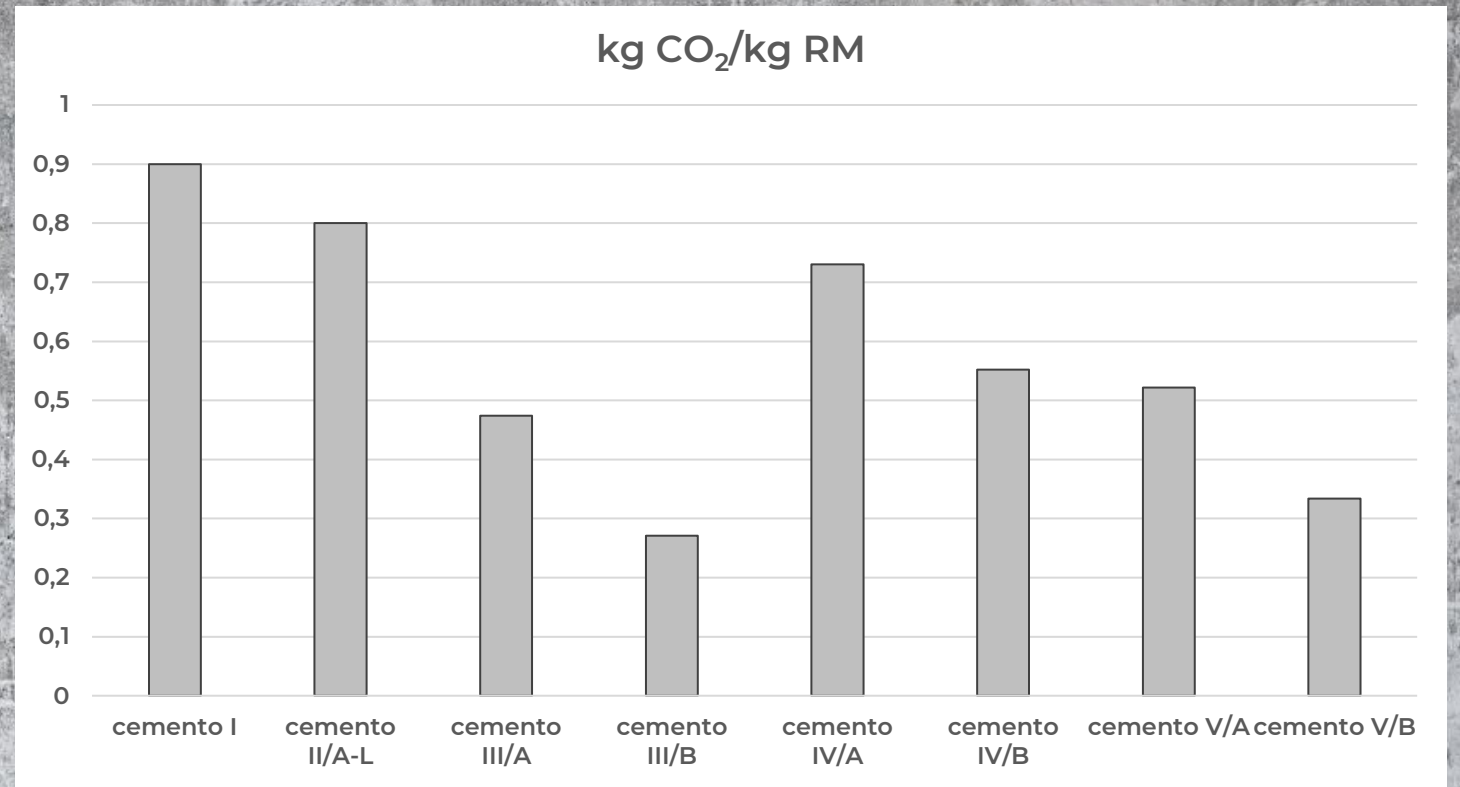
GALEAZZI HOSPITAL, MILANO



33.000 m³ concrete for the foundation in 96 hours



CEMENT

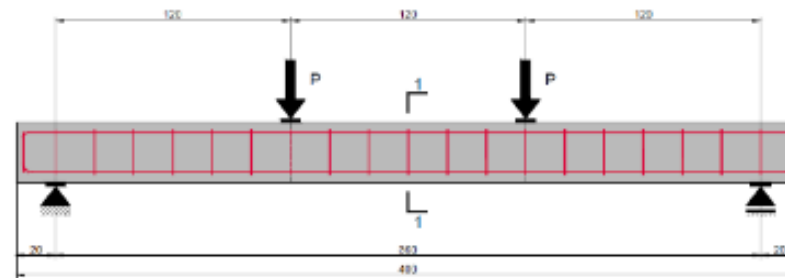


CONCRETE ECO DESIGN : MIX 1



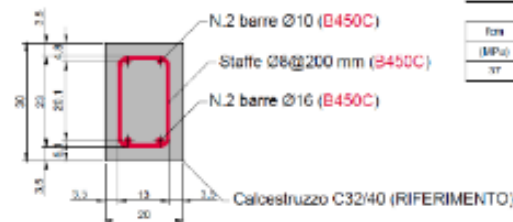
	DOSAGES	U.M.
cement II A LL 42,5 R	400	kg
water	165	lt
sand 0-6	885	kg
gravel 6-16	440	kg
gravel 16-31	545	kg
Dynamon SR1	2,6	lt

PROVA 1 - TRAVE TRADIZIONALE II
SCALA 1:20



TRAVE DI RIFERIMENTO

PROVA 1 - 1
SCALA 1:10



H	B	c	d	L	a	a/d	f _{yk}	f _{yk}	f _{yk}	ρ _{st}
(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(-)	(mm ²)	(mm ²)	(mm ²)	(%)
300	200	51	249	3000	1200	4.019	432	157	503	0.907

f _{cm}	E _c	f _{yk}	M _{yk}	V _{yk}	F _{yk}
(MPa)	(GPa)	(MPa)	(kNm)	(kN)	(kN)
37	32	500	48	140	48

GWP = 355 kg CO₂/ton

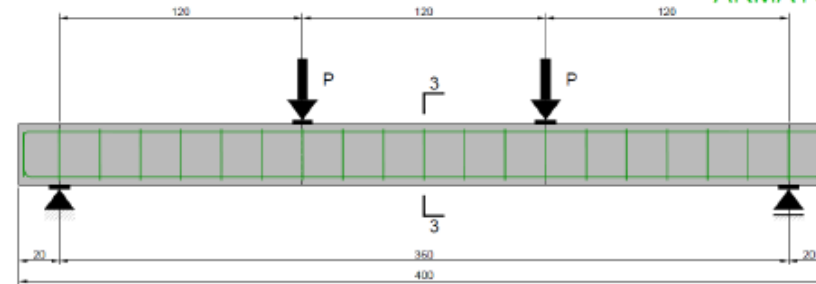
CONCRETE ECO DESIGN : MIX GREEN



	DOSAGES	U.M.
cement IV A 42,5 R	310	kg
MAPEPLAST PZ 300	80	kg
water	155	lt
sand 0-6	1005	kg
sand	85	kg
gravel 16-31	480	kg
RECYCLED CLS. 4-20	300	kg
CUBE 60	3,5	lt
Dynamon SR1	3	lt

PROVA 3 - ARMATURE LONGITUDINALI E TRASVERSALI NON METALLICHE
SCALA 1:20

CALCESTRUZZO GREEN STANDARD
ARMATURA IN FIBRA DI VETRO



SEZIONE 3-3
SCALA 1:10



H	B	c	d	L	a	a/d	As+	As-	Asw	ρs+
(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(-)	(mm ²)	(mm ²)	(mm ² /m)	(%)
300	200	51	259	9600	1200	4,693	330	100	600	0,637

f _{cm}	E _c	f _{yk} (Ø12)	E _k (Ø12)	f _{yk} (Ø8)	E _k (Ø8)	M _{max}	V _{max}	P _{max}
(MPa)	(GPa)	(MPa)	(GPa)	(MPa)	(GPa)	(kNm)	(kN)	(kN)
37	32	760	46	660	40	60	250	50

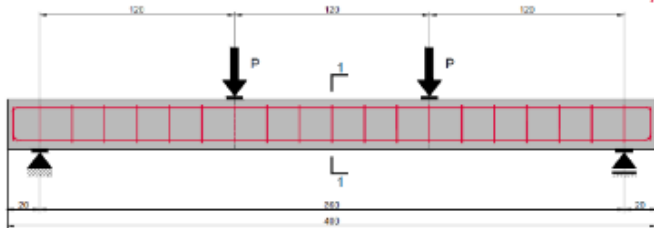
GWP = 270 kg CO₂/ton

CONCRETE

MIX 1

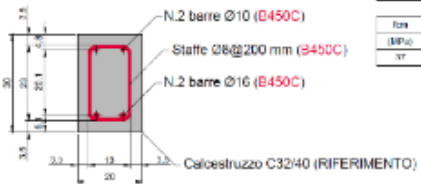
PROVA 1 - TRAVE TRAZIONALE II
SCALA 1:20

CALCESTRUZZO TRADIZIONALE
ARMATURA IN ACCIAIO



TRAVE DI RIFERIMENTO

SEZIONE 1-1
SCALA 1:10



H	B	c	d	L	a	a/d	A _{s+}	A _{s-}	A _{sv}	ρ _{sv}
(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(-)	(mm ²)	(mm ²)	(mm ² /m)	(%)
300	200	51	249	3000	1000	4.819	632	157	500	0.907

f _{cm}	E _c	f _y	M _{res}	V _{max}	F _{max}
(MPa)	(GPa)	(MPa)	(Nm)	(kN)	(kN)
37	30	460	41	148	481

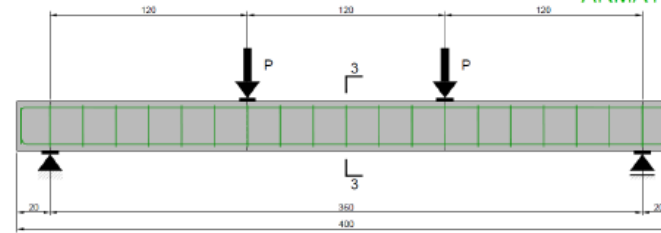
GWP = 355 kg CO₂/ton



MIX GREEN

PROVA 3 - ARMATURE LONGITUDINALI E TRASVERSALI NON METALLICHE
SCALA 1:20

CALCESTRUZZO GREEN STANDARD
ARMATURA IN FIBRA DI VETRO



SEZIONE 3-3
SCALA 1:10



H	B	c	d	L	a	a/d	A _{s+}	A _{s-}	A _{sv}	ρ _{sv}
(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(-)	(mm ²)	(mm ²)	(mm ² /m)	(%)
300	200	51	259	3600	1200	4.633	330	100	500	0.637

f _{cm}	E _c	f _y (Ø12)	E _F (Ø12)	f _y (Ø8)	E _F (Ø8)	M _{res}	V _{max}	F _{max}
(MPa)	(GPa)	(MPa)	(GPa)	(MPa)	(GPa)	(Nm)	(kN)	(kN)
37	30	760	48	850	48	60	250	50

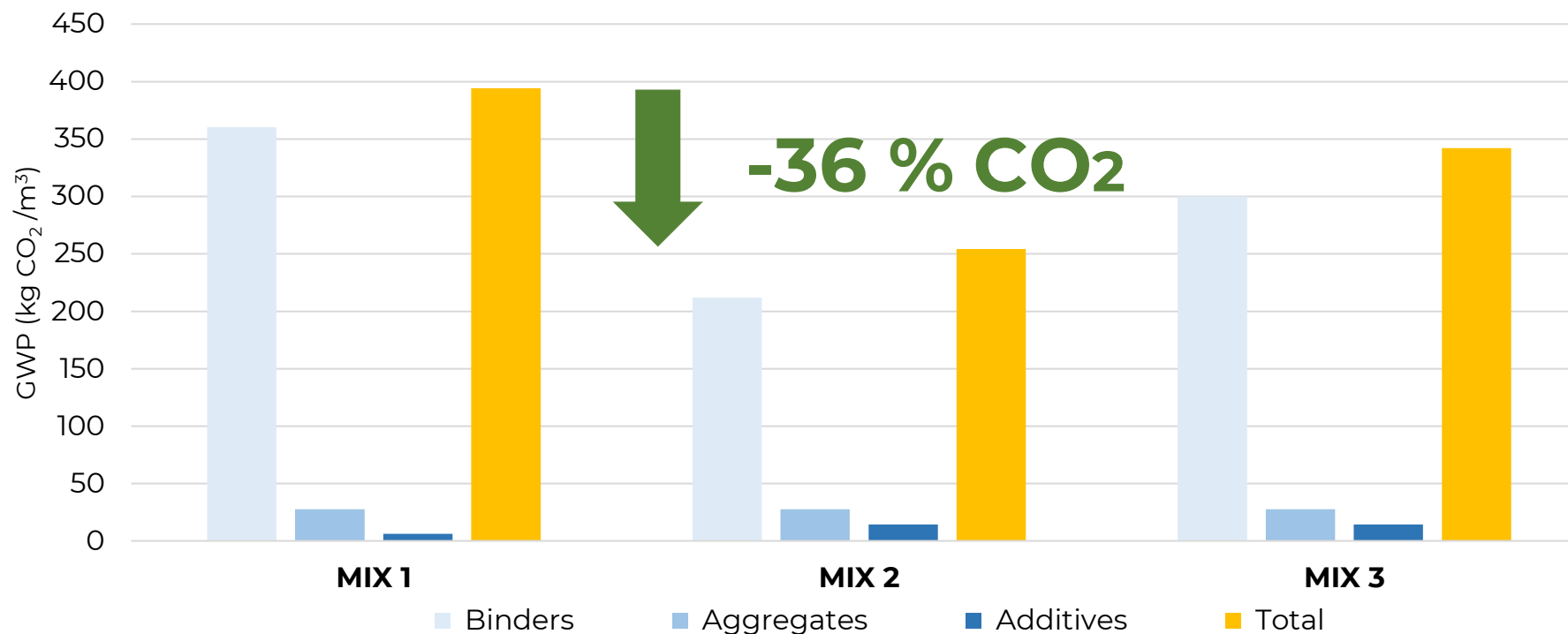
GWP = 270 kg CO₂/ton

-25% CO₂

PRECAST CONCRETE



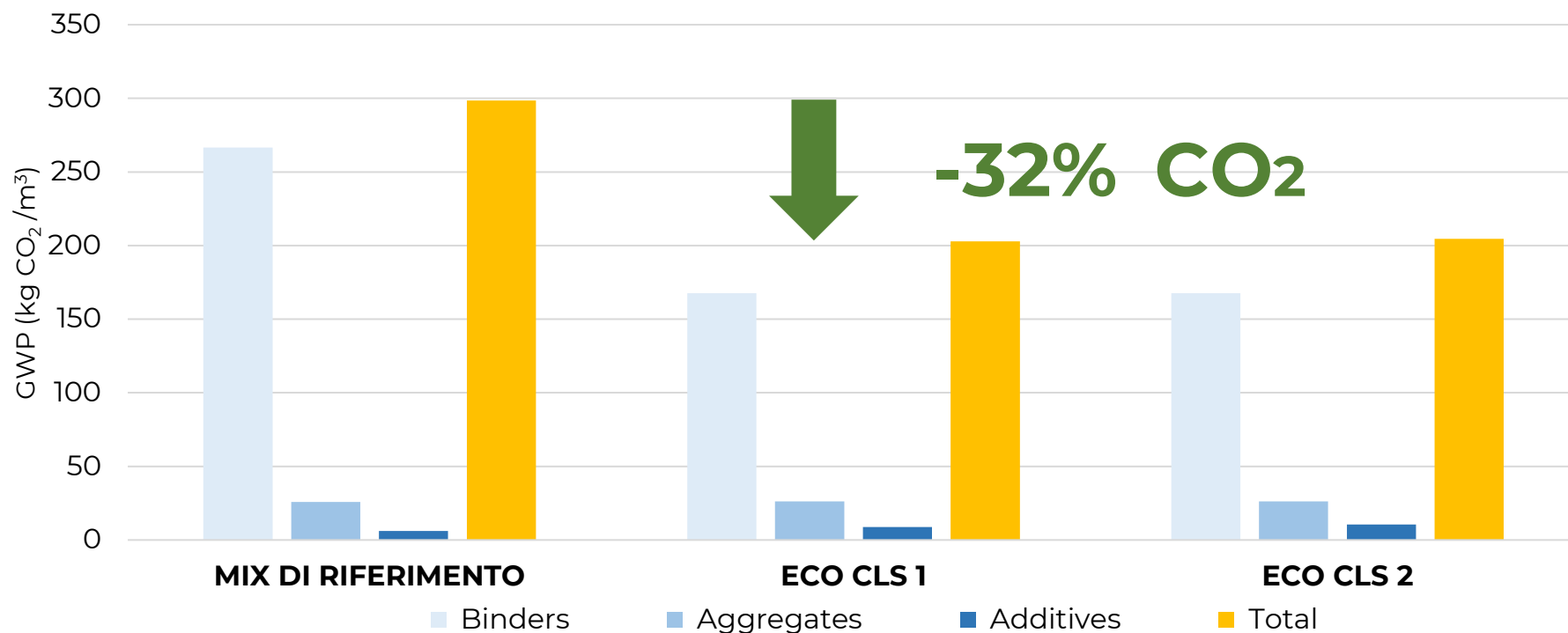
PRECAST		MIX 1	MIX 2	MIX 3
	U.M.			
SAND 0-4	kg/mc	950	950	950
GRAVEL 5-12	kg/mc	320	320	320
GRAVEL 12-22	kg/mc	580	580	580
CEM IV 42,5 R	kg/mc	-	400	-
CEM I 52,5 R	kg/mc	400	-	-
CEM II A-LL 42,5 R	kg/mc	0	-	400
WATER	lt/mc	170	162	162
DYNAMON	kg/mc	4	4	4
MAPECUBE 60	lt/mc	0	4	4
MAPECUBE 4	lt	-	-	1,5
GWP FORMULATION	kg/mc of CO₂	394,35	254,15	342,15



Composition	MIX 1 GWP (kgCO ₂ /m ³)	MIX 2 GWP (kgCO ₂ /m ³)	MIX 3 GWP (kgCO ₂ /m ³)
Binders	360,4	212	300
Aggregates	27,75	27,75	27,75
Additives	6,2	14,4	14,4
Total	394,35	254,15	342,15



		REFERENCE MIX	ECO CLS 1	ECO CLS 2
	U.M.			
CEMENT II A-LL 42,5 R	kg	410	-	-
CEMENT IV A 42,5 R	kg	-	300	300
WATER	lt	180	160	160
SAND	kg	800	850	850
GRAVEL 4-16	kg	445	440	440
GRAVEL 16-22	kg	535	525	525
MAPEPLAST PZ300	kg	-	80	80
X TEND W 400 R	lt	4	4,5	-
DYNAMON CUBE 805	lt	-	-	4,5
MAPECUBE 4	lt	-	-	1,5
GWP FORMULATION	kg CO₂/mc	298,5	202,8	204,5



Composition \ Mix	MIX di RIF. GWP (kgCO ₂ /m ³)	ECO CLS 1 GWP (kgCO ₂ /m ³)	ECO CLS 2 GWP (kgCO ₂ /m ³)
Binders	266,5	167,7	167,7
Aggregates	25,9	26,3	26,3
Additives	6,1	8,8	10,5
Total	298,5	202,8	204,5



From Mapei research, innovative solutions and services to help reduce the environmental impact of concrete production.



ENVIRONMENTAL PRODUCT DECLARATION

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MAPECUBE 60W

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CO2 REDUCTION



ROBUSTNESS



STRENGTH ENHANCEMENT





CARBON CREDIT: THE PROCESS

ANNUAL PRODUCTION
(TON)



Kg of CO₂ per kg of finished product

TONS
of
CO₂ to purchase
for the offset



Kg of CO₂ per kg of finished product



FROM 11 YEARS CO₂ OFFSETTING OF KERAFLEX MAXI S1 ZERO ITALIAN PRODUCTION





**CO2 OFFSETTING
HYDROPOWER (VIETNAM)
AND REFORESTATION (INDONESIA)**

**BUILDING MORTARS
CERAMIC TILE ADHESIVES
WATERPROOFING
CLEANERS
RESTORATION MORTARS**



OFFSETTING OF RESIDUAL CO₂ EMISSIONS HYDROPOWER (VIETNAM) AND REFORESTATION (INDONESIA) KERAFLEX MAXI S1 ZERO AND ULTRACOLOR PLUS WORLDWIDE



In 2023 Mapei offset **80.000** tons CO₂



40 round-the-world flights

NOTICE

Offsets are not a replacement for taking action to reduce our carbon footprint

On the contrary, they are the last option to offset emissions we cannot currently avoid

**R&D IMPROVES FORMULAS FOR DURABLE AND QUALITY PRODUCTS
WITH LOW ENVIRONMENTAL IMPACT**



- **MEASURING ENVIRONMENTAL IMPACTS BY LCA**
- **THIRD-PARTY CERTIFICATION**
- **ROLE R&D in REDUCING CO₂ EMISSIONS**
- **CO₂ OFFSET**

Climate change: which of these two products causes less impact?

Find out how much CO₂ Mapei products give off compared to ordinary products used in everyday life.



Dynamon SX 32 (1 kg)

Vs



a T-shirt





sustainability@mapei.it