

MAPEFLUID IF328[®]

ENHANCED SUPERPLASTICISING ADMIXTURE FOR CONCRETE (ASTM C494 - F)

DESCRIPTION

MAPEFLUID IF328 is an enhanced superplasticising liquid admixture for quality concrete (watertight and durable) with high early strength.

WHERE TO USE

Because of the high workability (consistency class S₄ and S₅ according to UNI 9858 and ENV 206) obtained without excess water in the mix, concrete with MAPEFLUID IF328 admixture is easy to place in the plastic stage and has high performance characteristics at early ages.

MAPEFLUID IF328 is recommended for applications requiring greater effectiveness and more rapid attainment of final performance than that offered by conventional superplasticisers. Its principal uses are for:

- precast concrete;
- quality concrete.

Typical applications

In addition to its plasticising effect, MAPEFLUID IF328 has a slight accelerating action on the hydration of cement: it is a Type F super-plasticiser

according to ASTM C494 and is therefore especially recommended for:

- precast concrete (with reduced steam curing);
- concrete for watertight structures: purification plants, reservoirs, canals, tunnels, etc.
- concrete for reinforced or pre-stressed concrete structures exposed to aggressive agents: beams, columns, bridge decks and viaducts;
- quality concrete for structures with R_{ck} higher than 30 MPa.

TECHNICAL CHARACTERISTICS

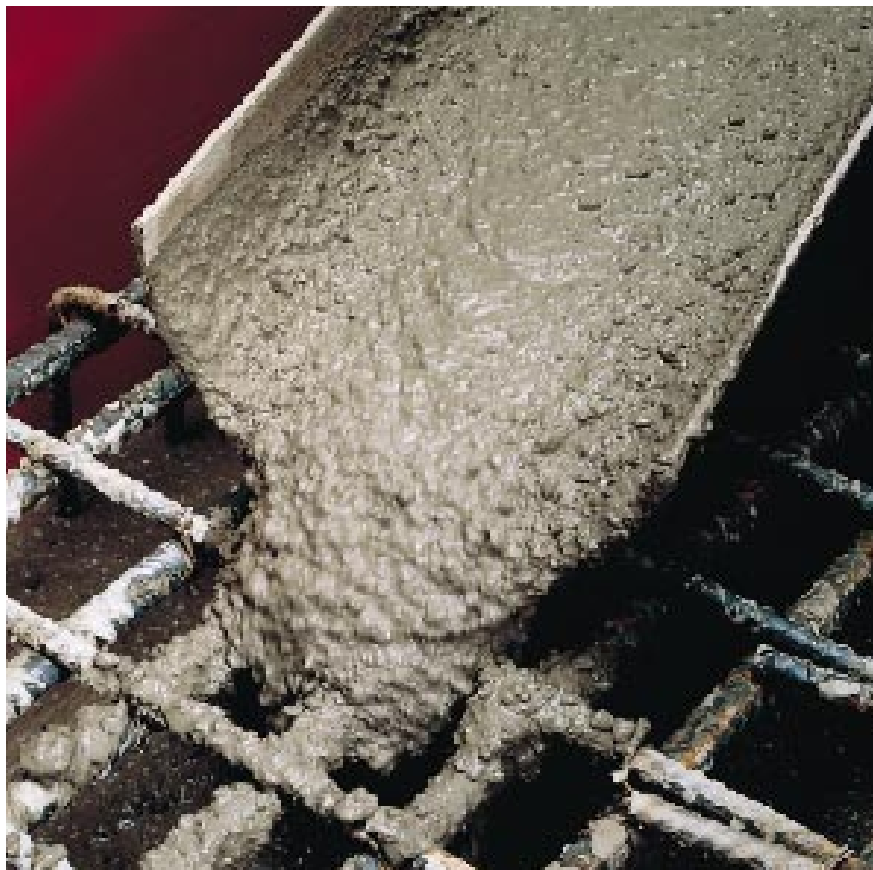
MAPEFLUID IF 328 is a 40% water solution of active polymers and hydration catalysts that disperse cement granules (see "Technical Data" table).

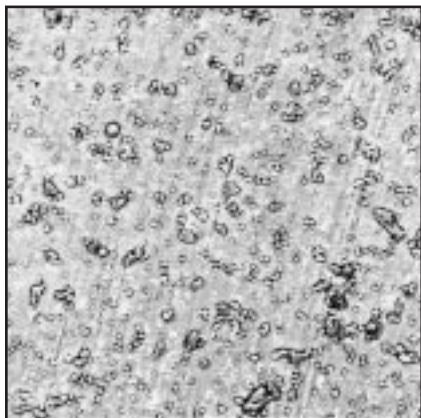
MAPEFLUID IF 328's dispersing action (Fig. 1) can be used in three ways:

A) to reduce mixing water only compared with that of plain concrete with the same workability, for increased strength, reduced permeability to water and improved durability (see "Concrete Performance" table);

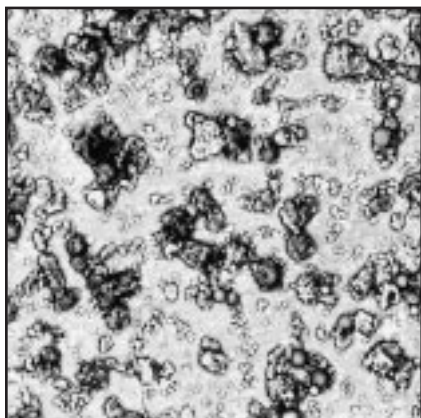
B) to improve workability compared with that of plain concrete with good performance characteristics (strength, impermeability, durability) that is otherwise difficult to place (stiff or plastic concrete);

C) to reduce both water and cement (in equal proportions) so that the water / cement ratio and concrete performance are not changed in comparison with those of plain concrete without admixture: in this case, there are both economic advantages (the cost of the admixture is lower than the saving on cement), and technical improvements, due to reduction in drying shrinkage, creep





A



B

Fig. 1 - Water suspension of cement with (A) and without (B) superplasticiser.

and thermal stress caused by the heat developed during cement hydration. This method is especially recommended for concrete with a high cement factor ($> 350 \text{ kg/m}^3$).

Fig. 2 illustrates three ways of using MAPEFLUID IF328. The admixture's special action can be adjusted to obtain the results required (increased strength, improved workability, reduced cement factor) by varying the dosage between 1% and 2,5% by weight of cement: the higher the dosage, the greater the effect.

RECOMMENDATIONS

Although there are no specific uses for which MAPEFLUID IF328 is unsuitable, the following are effective alternatives:

- for preparation of ready-mixed concrete, especially in hot weather, use MAPEFLUID R104 or MAPEFLUID X404;
- for mass concrete pours, use MAPEFLUID R104 to reduce thermal peaks caused by the heat generated in cement hydration.

DIRECTIONS FOR USE

It is preferable to add MAPEFLUID IF328 into the mixer after all the other ingredients (water, cement, aggregates). The action of the admixture is more effective when added later. MAPEFLUID IF328 is most effective when cement and aggregate grains are already wet, and least effective when the admixture is mixed with dry solids, especially if porous, which partially absorb it. It is advisable to begin adding the admixture with an automatic dispenser when at least half the water required for the mix has been introduced into the mixer.

Compatibility with other products

MAPEFLUID IF328 is compatible with other products for producing special concrete, and especially with:

- MAPEPLAST PT1, the air-entraining agent for preparation of concrete resistant to freeze-thaw cycles;
- MAPEFLUID PZ500, the micro-silica powder superplasticising admixture

for preparation of top-quality concrete with strength, durability and impermeability;

- EXPANCRETE, the Mapei expansive agent for preparation of shrinkage-compensated concrete;
- fly ash for preparation concrete with artificial pozzolan;
- Mapei's DMA 1000 or DMA 2000 FORM-RELEASE AGENTS for stripping concrete formwork;
- MAPECURE E, the Mapei curing compound for protection against overly rapid evaporation of mix water in concrete flatwork (e.g. floors).

DOSAGE

Dosage by weight

From 1.0 to 2.5 kg per 100 kg of cement.

Dosage by volume

From 0.8 to 2.1 lt per 100 kg of cement.

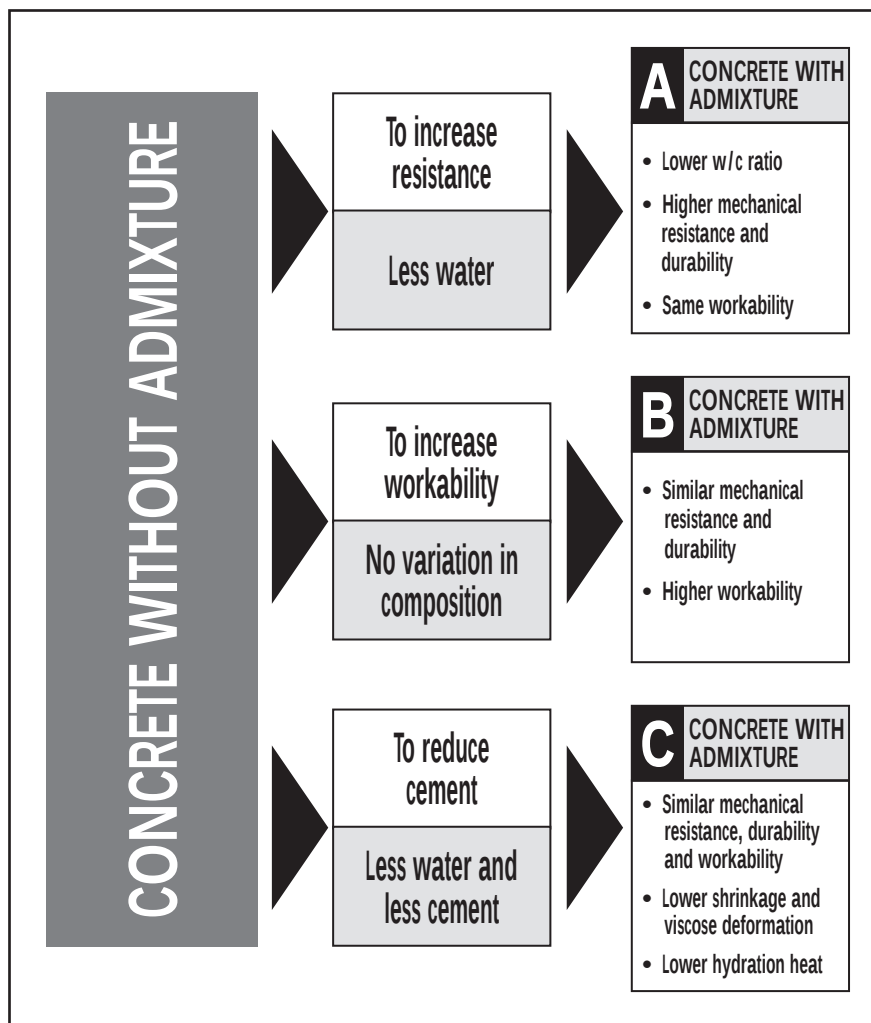


Fig. 1 - Three different ways to take advantage of MAPEFLUID IF328 admixture

TECHNICAL DATA:

PRODUCT IDENTIFICATION

Consistency:	liquid
Colour:	brown
Specific gravity:	1.21 ± 0.02 kg/lit at +20°C
Active product:	40%
Specific action:	high-range water reduction and/or improved workability
Collateral action:	acceleration of initial hydration
Classification:	Type F according to ASTM C494
Chlorides:	no
Storage:	12 months in original unopened packaging. Protect from frost.
Health hazard sec. 88/379 EEC:	no
Inflammability:	no
Customs class:	3824 40 00

PERFORMANCE DATA OF MAPEFLUID IF328 IN CONCRETE (*)

Admixture dosage (% by volume of cement):	0	1.0	1.5	2.0
Water / cement ratio:	0.60	0.50	0.44	0.39
Water reduction compared to concrete without admixture (%):	–	17	26	35
Workability: slump initial (cm)	20	21	20	21
slump after 30 min. (cm)	14	12	14	13
Compressive strength (MPa) after:				
1 day	8	16	21	25
3 days	16	29	36	40
7 days	24	40	47	55
28 days	35	51	62	70
Compressive strength (MPa) according to UNI 9858 and ENV 206:				
R _{ck} (Control Type A)	30	45	55	65
R _{ck} (Control Type B, δ = 5 MPa)	25	40	50	60
Water penetration (mm) according to DIN 1048 after 28 days of curing:	30	13	4	0
Impermeability to water according to UNI 9858 and ENV 206:	no	yes	yes	yes
Durability: environmental exposure:	1	1	1	1
classes of concrete according to ENV 206:	2a	2a, 2b	2a, 2b 3	2a, 2b 3
		4a	4a, 4b	4a, 4b
		5a	5a, 5b, 5c	5a, 5b, 5c

(*) These data are average values obtained for concrete with 360 kg/m³ of cement CEM I 42.5 R with crushed aggregates (max. diam.: 20 mm.). For environmental exposure classes 2b, 3 and 4b, air in the form of micro-bubbles must be entrained in a proportion of 5% by volume.



Pouring concrete admixed with MAPEFLUID IF328 for precast concrete panel



Casting slab with concrete admixed with MAPEFLUID IF328



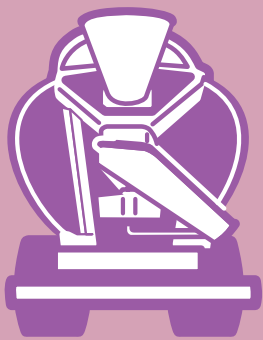
Typical precast element requiring the use of MAPEFLUID IF328

PACKAGING

MAPEFLUID IF328 is available in 200 lt drums, and 1,000 lt tanks. It is also available in bulk on request.

STORAGE

Store in closed containers; protect from frost and direct sunlight.



WARNING

N.B. Although the technical details and recommendations contained in this report correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application. For this reason; anyone intending to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from use of the product.

N.B. FOR PROFESSIONAL USE ONLY

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