



Kao Industrial (Thailand) Co., Ltd.

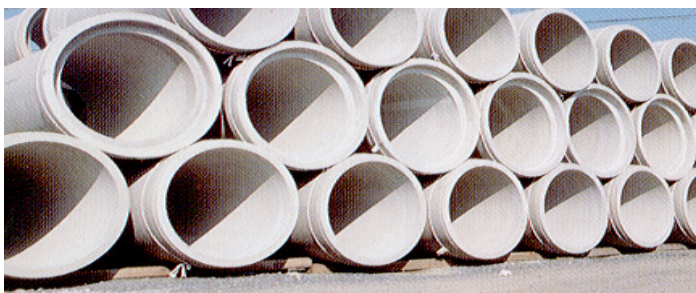
Construction Chemicals

Kao is an inventor of super-plasticizer, Naphthalene Sulfonate type, name MIGHTY 150.

We have been selling various concrete admixtures more than 45years with high quality.

Kao products for concrete admixtures

Type B	Type D	Type F	Type G
Retarding	Water-reducing and retarding	High-range water reducing Superplasticizer	High-range water reducing Superplasticizer and retarding
MIGHTY 80RA MIGHTY 70RA MIGHTY 45RA	MIGHTY 90RA MIGHTY 85RA MIGHTY 99R	MIGHTY 150 MIGHTY 21 MIGHTY HS	MIGHTY RD MIGHTY RD-HP MIGHTY 501 MIGHTY 3000





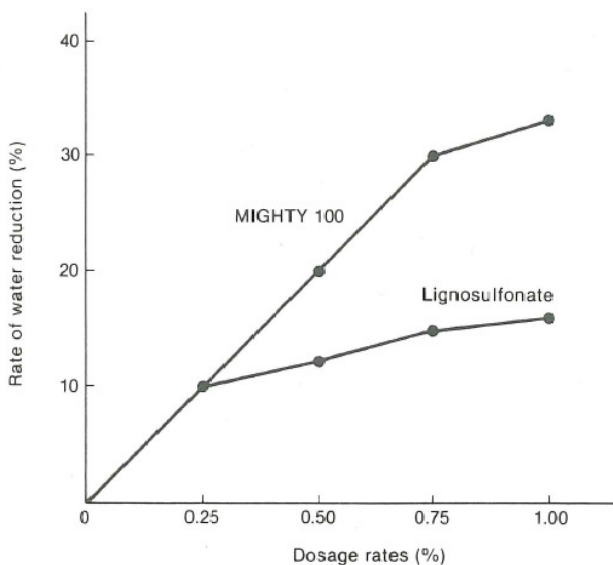
MIGHTY 150

The first Superplasticizer in the world

MIGHTY 150 is the first superplasticizer in the world for high performance concrete.

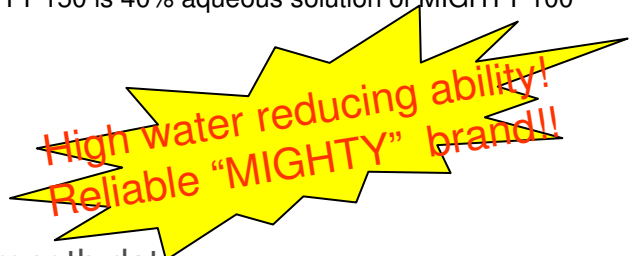
You can make high strength and high durability concrete with good workability by using superplasticizer, MIGHTY.

We guarantee the high quality of MIGHTY backing with high technology of concrete and chemicals.



Cement : Ordinary portland cement (440kg/m³)
 Sand : River sand
 Gravel : River gravel (Maximum size 25mm)
 W / C : 39%
 s / a : 36.3%(MIGHTY 100)
 34.3%(Lignosulfonate)
 Slump : Constant (5.5 ± 1.0cm)

*MIGHTY 150 is 40% aqueous solution of MIGHTY 100



Water reducing ability and compressive strength data

Dosage rates (%)	W/C (%)	s/a (%)	Water (kg/m ³)	Cement (kg/m ³)	Rate of water Reduction	Slump (cm)	Compressive strength (kg/m ³)	
M150							7days	28days
0.0	42.5	38.6	170		0%	9.5	352	508
0.6	40.0	36.7	160		-6%	8.0	462	627
1.2	37.3	38.5	149	400	-12%	9.2	519	700
1.8	34.3	39.6	137		-19%	9.6	632	735
2.4	31.5	40.5	126		-26%	9.8	659	781
0.0	37.0	34.0	185		0%	8.8	474	642
0.6	35.0	33.5	175		-5%	7.5	562	747
1.2	32.0	34.5	160	500	-14%	7.0	715	829
1.8	29.6	35.6	148		-20%	9.3	724	842
2.4	27.4	36.6	137		-26%	9.5	732	879



MIGHTY 501

The latest retarding Superplasticizer

MIGHTY 501 is the latest superplasticizer for high performance concrete.

You can make a **long slump retention with high early strength** and **without setting retardation**.

MIGHTY 501 shows better and more stable performance for concrete using Fly Ash, Slag, M-sand compare to PC type.

MIX design						
W/C (%)	s/a (%)	Unit content (kg/m ³)				
		Water	Cement	Slag	Sand	Gravel
40	44	160	150	250	810	1020

Cement : Ordinary Portland Cement

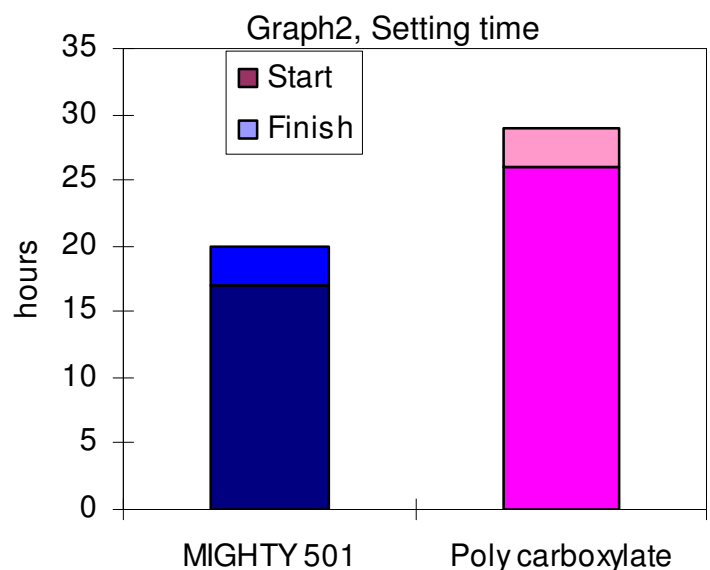
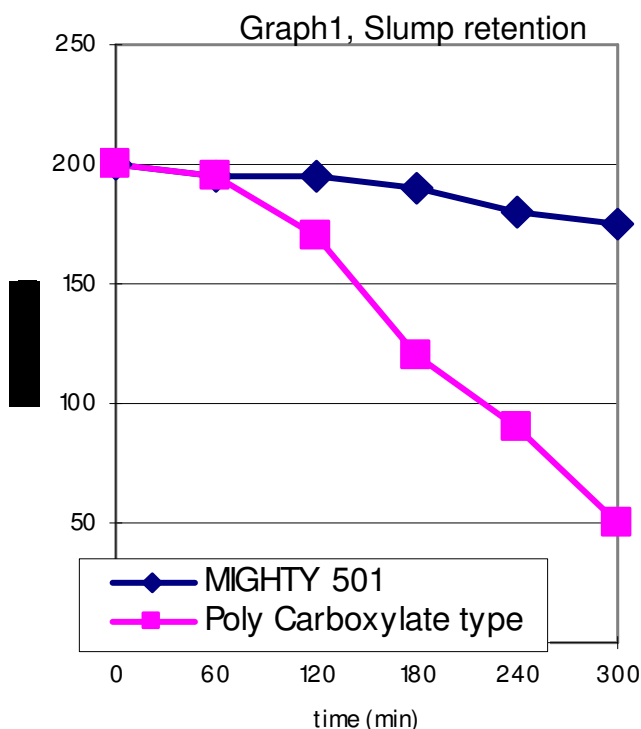
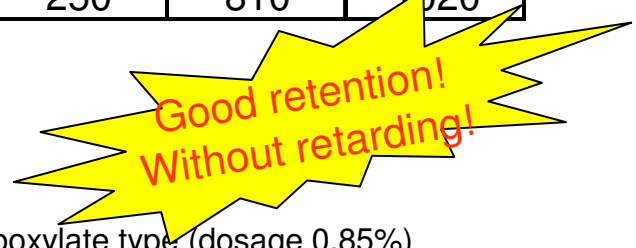
Slag : Blast Furnace Slag (4000 cm³/g)

Sand : Crushed Sand

Gravel : Crushed Stone

Specification of Concrete Slump : 150-200 mm

Admixture : MIGHTY 501 (dosage 1.0%), Poly carboxylate type (dosage 0.85%)



MIGHTY 21

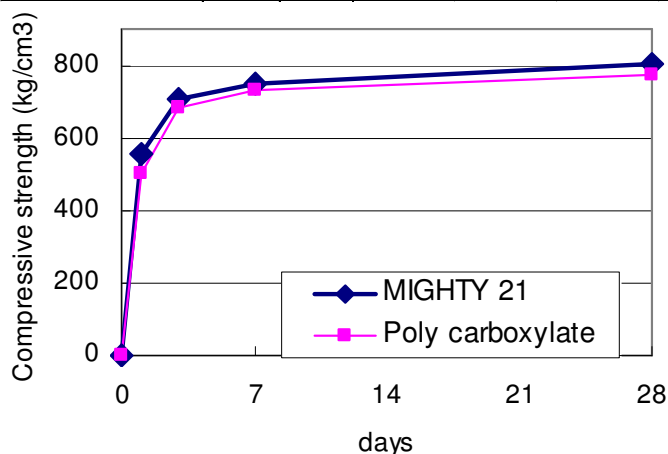
Superplasticizer Poly Carboxylate type

MIGHTY 21 is the **Poly ether (Poly carboxylate)** basis super plasticizer for high performance concrete, SCC, Ultra high strength concrete, and so on.

MIGHTY 21 shows higher performance for **early strength and anti-segregation for SCC** than other PC.

*The comparison test for early strength between MIGHTY 21 and conventional PC

Admixture	W/C (%)	s/a (%)	Unit content (kg/m ³)				Dosage (%)	Slump		Compressive strength			
			Cement	Water	Sand	Gravel		Initial	30min	1	3	7	28
MIGHTY 21	29	37	490	140	679	1161	1.0	15.0	6.5	541	705	751	804
Poly carboxylate							1.0	15.0	4.0	500	681	750	771



Cement : Ordinary Portland Cement
 Sand : Crushed Sand
 Gravel : Crushed Stone
 Admixture : MIGHTY 21, Poly carboxylate
 Curing; 30 °C



*The comparison for each relationship between slump flow and segregation resistance

