SANHO CHEMICAL CO., LTD.
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KINGMIDE 549

KINGMIDE 549 is fatty polyamide resin especially designed for the flexographic printing ink uses. it is easy to alcohol soluble and mixing organic solvent –such as toluene and alcohol type solvent . the followings are the major characteristics of the KINGMIDE 549 as used in a flexographic printing ink formulation

1. SPECIFICATION

Appearance	：Brown Yellow Pellets.
Softening Point(Ball and Ring / ℃)	：117 ± 5
Viscosity (Gardner-Holdt / 25℃)	：*E ~ H
Color (Gardner)	：*12 Max
Sp.Gr. (25℃)	：0.98
Acid Value (mg-KOH / gm)	：10 Max
Amine Value (mg-KOH / gm)	：10 Max

*The solution viscosity of KINGMIDE 549 are of 40% solution in Iso-propanol

2. SOLUTION STABILITY

(1) IPA solution

Resin content / Temp.(℃)	20%	30%	40%
15	F	F	F
10	F	F	G
5	F	G	G

F：Fluid G：Gel

(2) Viscosity and stability of alcohol solution (solid content 40%)

Name of alcohol	Viscosity (Gardner Bubble Viscometer)	Solution stability	
		23℃	15℃
Ethanol	A ~ B	F	F
IPA	F^-	F	F
n-Propanol	E	F	F

F：Fluid

3. FLEXOGRAPHIC-INK TEST (The ink was prepared by ball milling.)

(1) (a) Ink formulation ~1

KINGMIDE 549	24.0
Pigment [1]	13.0
IPA	48.0
n-Hexane	15.0

(b) Ink formulation ~2

KINGMIDE 549	20.0
PIGMENT [2]	10.0
NC varnish [3]	24.0
IPA	30.0

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Antioxidant (BHT)	0.1
Antioxidant (DLTP) [5]	0.1
	100.2

Ethylacetate	3.0
Solmix AP-3 [4]	10.0
Ethylcellosolve	3.0
Antioxidant(BHT)	0.1
Antioxidant(DLTP) [5]	0.1
	100.2

[1] Phthalocyanine blue

[2] Red 3BF
(Sumitomo chemical)

[3] NC varnish：

L1 / 8“ NC	20
IPA	60
Ethylacetate	10
Ethylcellosolve	10
	100

[4] Solmix AP-3 modified ethanol

[5] Dilauryl thiodipropionate(DLTP)

$CH_2CH_2COO(CH_2)_{11}CH_3$
$CH_2CH_2COO(CH_2)_{11}CH_2$

CAS NO.123-28-4

(2) Ink viscosity (Zahn cup No.4)

Ink formulation ~1	10.8 s
Ink formulation ~2	22.3 s

(3) Printing test

The above test ink was printed using a test rotogravure plate onto a treated polyethylene film and treated polypropylene film and the ink films were then subjected to various tests as follows：

(a) Adhesion test：Cellotape Test

(b) Water resistance：The printed film was immersed into tap water for 24 hours. Water was wiped off of the ink film and the cellotape test and crinkle test was made.

(c) Oil resistance：24 hours after printing soyabean oil was applied onto the ink film and after 24 hours rubbing test by using Rubo-tester. load 200g 50 strokes.

(d) Heat resistance：Treated polypropylene film was employed in this case. Heat sealing test was conducted with a seal tester, load 2 kgf/㎠ and sealing time 0.5 s.

(e) Blocking resistance：Treated polypropylene film was employed in this case. Using

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IPI Type Blocking tester. Test condition：Temp. 50℃, Humidity 80%, load 1 kgf /㎝ ^{2}, 24 hours.

(4) Test results

Film		Formulation		Formulation	
		PE	PP	PE	PP
Adhesion		Ex	Ex	Ex	Ex
Water resistance	Immersed	F	G	F	
	Crinkle		Ex		
Oil Resistance			Ex	Ex	
Heat resistance					G
Blocking resistance					G
Gloss		Ex	Ex	Ex	Ex

Ex ：Excellent
G ：Good
F ：Fair
P ：Poor