

## **Introducing Waterborne Solid acrylic resin & emulsion from Kening**

Ingennus Polymers is pleased to offer superior paint, ink & coating technology on behalf of Kening Chemical Technology Company one of the leading high-tech chemical companies in China. Kening specialise in waterborne solid acrylic resin & emulsion for packaging and printing paint. The company has been successfully certified with ISO9001 and holds self-registered trademark "LEVERTEX".

The production process and rigorous quality control ensure highly consistent and reliable products. These are low VOC and are comparable to brands like BASF & HANWHA but providing significantly enhanced performance and improved value for money.

Kening have recently invested in additional production capacity in order to bring these products to international markets.

### ***Levertex Waterborne solid acrylic resin***

Levertex Waterborne solid acrylic resin has been developed by Kening's own independent research and development to meet customer demands for improved performance. An all new manufacturing process has resulted in a total of eight new patents for this improved resin used in the synthesis and remix of waterborne acrylic emulsion. Levertex waterborne acrylic resin is also a necessary component for the preparation of waterborne ink and is widely used in paper packaging and printing industry. As a consequence Levertex waterborne acrylic resin has a 30% market share in China and has met with a very favourable response in international markets.

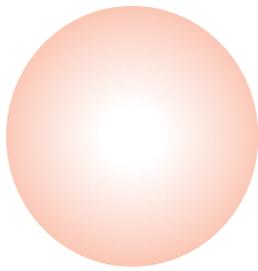
### ***Levertex Waterborne Acrylic Emulsion***

Levertex Waterborne acrylic emulsion is used for aqueous coatings and is the main component for the remix of waterborne ink, playing an important role in aqueous coatings and waterborne ink applications. A more established product for Kening In the waterborne acrylic emulsion printing market holding about 60% share of the domestic Chinese market with a large and established customer base.

### ***Ingennus Polymers***

Ingennus Polymers have been asked to market these products on behalf of Kening covering the following geographies:

Europe, Middle East & Africa  
India  
Russia  
Turkey  
North, Central and Latin America



### ***Product Characteristics and Core Technology of Levertex***

Levertex acrylic resin quality and pricing has obvious advantages to large ink manufacturers. Even those that may make their own aqueous emulsion resin will be unable to match the quality and performance of Kening technology for high-end products for which they can still rely on Levertex.

Levertex solid acrylic resin can withstand the pressure and shearing force of high-speed grinding. It has good affinity with the pigment and is a highly effective wetting agent and abrasive. It helps the pigment dispersion and coloration. This solid acrylic resin also has a great advantage on colour fastness and printability.

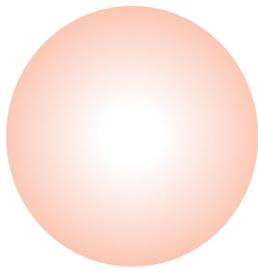
Levertex waterborne acrylic emulsion has good transparency and good viscosity stability. When varnish is remixed with it, it has high gloss, good adhesion, abrasion resistance and good compatibility with other products. When an aqueous is remixed with it, it has good compatibility, good colour rendering and high gloss. Its main application is in printing and varnishing.

### ***Superior Mechanical Properties***

Levertex is the only Chinese brand that can be polymerized producing solid acrylic resin. Levertex can match the quality of BASF and is superior to products such as that from Hanwha. Neither can match the value for money offered by Levertex

The application of advanced technology during the synthesis of aqueous acrylic emulsion form an initial synthetic latex particle diameter of approximately 10nm. We use the best emulsifier ratio during the next continuously dropping process, so that the emulsion particle growth is a relatively slow synthesis. Finally, after curing, an emulsion particle diameter of about 200nm is obtained which has good mechanical acrylic emulsion and chemical stability.

Kening has pioneered a continuous bulk polymerization process for waterborne acrylic resin yielding a solid content, low VOC, narrow molecular weight distribution and a variety of performance criteria comparable to **BASF** resin and superior to **Hanwha** resin, with low energy consumption and high efficiency.

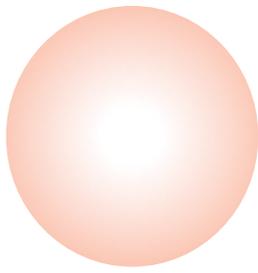


**Solid product grade comparison table**

Grade	BASF	Hanwha	Induprez	Molecular Weight
Levertext® 564	JONCRYL® 675	-	-	5,700
Levertext® 566	-	S-70	SR-10	7,500
Levertext® 567	JONCRYL® 67	S-120	-	12,800
Levertext® 568	JONCRYL® 678	S-820	-	8,500
Levertext® 582	JONCRYL® 684	S-20	SR-30	1,700
Levertext® 584	JONCRYL® 684	S-20	SR-30	2,000
Levertext® 569	JONCRYL® 690	-	-	16,500
Levertext® 571	JONCRYL® 671	-	-	17,250
Levertext® 596	JONCRYL® 696	-	-	17,250
Levertext® 586	JONCRYL® 686	-	-	4,600

**Emulsion product grade comparison table**

Grade	BASF
Levertext® R-31	JONCRYL® 631
Levertext® R-148/48	JONCRYL® 77
Levertext® R-27	JONCRYL® 617
Levertext® R-34	JONCRYL® 74
Levertext® R-50	JONCRYL® 624
Levertext® R-191/91	JONCRYL® 89
Levertext® R-90/8190	JONCRYL® 90



Within the Levertex portfolio Ingennus would especially draw your attention to 567 & 568 grades

**Product Type comparison table**

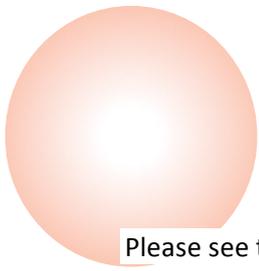
<b>Levertex</b>	<b>BASF</b>	<b>Hanwha</b>
568	678	N/A
567	J67	S-120

**Comparison of waterborne resin with other manufacturers Products**

Test	Other China brands	BASF	Levertex
Appearance	Yellowish solid	Transparent solid	Transparent solid
Solid Content(%)	95	97.6	>97.9
Acid Value (mgKOH/g)	210-230	215	215
Softening Point(°C)	150	165	165
Glass Transition Temp(°C)	80-85	85	85
Avg Molecular Weight(MW)	10000	9300	9209

Levertex is superior to most domestic brands in appearance and comparable to BASF. The solid content is even higher than BASF, i.e. high purity. This means that during application the impact of other factors can be minimized. The acid value of Levertex is very stable with high softening point and is able to meet all the requirements of practical application.

Levertex has the lowest molecular weight and can achieve higher gloss and superior levelling than any product available including BASF.

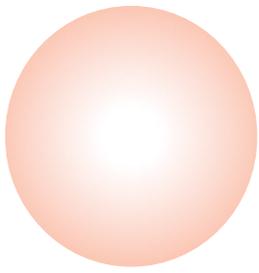


Please see the following table for the comparison of Varnish Application:

Test	Other China brands	BASF	Levertex
Gloss(degree)	60	70	72
Wear(time)	51	120	117
Adhesion(grade)	1	1	1
Water resistance(min)	87	128	135
Viscosity(cps)	2000	800	800

From the above table it can be seen that Levertex has better coating performance than BASF and superior water resistance than similar products.

***The following 2 pages (6 & 7) are the technical data of Levertex 567 & 568.***



## Levertex 567

**Levertex 567** is a solid acrylic resin, with a common molecular weight, high gloss, clear and transparent, with a good colour. It is especially suitable for the synthesis of pigment grinding, emulsion and polymer emulsion.

### Typical properties:

- Excellent gloss
- Excellent scrubbing resistance
- Excellent compatibility
- Excellent transparency
- Excellent colour rendering, stability and pigment dispensability

### Application:

- Pigment grinding
- Synthesis of emulsion and polymer emulsion

### Product specification:

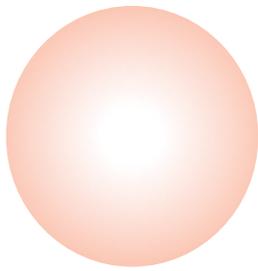
Appearance	Transparent solid
Solid content %	>99.0
Density g/cm <sup>3</sup> , 25°C	1.13
Acid value	215
Molecular weight	12,800
Softening point °C	155
VOC wt.%	1.0
TG °C	+102

### Storage:

Stored in dry and cool indoor.

### Packing:

25kg / bag.



## Levertex 568

**Levertex 568** is a water-based solid acrylic resin, with a common type medium molecular weight of high gloss, clear and transparent and with a good colour. It is especially used in pigment grinding, synthesis of emulsion and polymer emulsion.

### **Typical properties:**

- Excellent gloss
- Excellent scrubbing resistance
- Excellent compatibility
- Excellent transparency

### **Application:**

- Pigment grinding
- Synthesis of emulsion and polymer emulsion

### **Product specification:**

Appearance	Transparent solid
Solid content %	>99.0
Density g/cm <sup>3</sup> , 25°C	1.16
Acid value	215
Molecular weight	8500
Softening point °C	165
VOC wt.%	1.0
TG °C	85

### **Storage:**

Stored in dry and cool indoor.

### **Packing:**

25kg / bag.