Cyclohexanone-Formaldehyde Resins

[STRUCTURAL FORMULA]

CAS Number - 25054-06-2
Trade Names - KTR-80, KTR-100, KTR-118, KTR-123
Chemical Name - CYCLOHEXANONE-FORMALDEHYDE RESIN

1. GENERAL DESCRIPTION]

Ketonic Resins (KTR) dissolve readily in alcohol (except methanol), Ketones (except acetone) ester and in low chlorinated hydrocarbons. It is neutral, light in colour and inert to saponification. Ketonic Resins have good pigment-wetting properties. This leads to brilliant gloss even at high pigmentation. In printing inks, KTR improves solid content, hardness, adhesion and drying time. KTR also increases yield of coating systems.

2. [PACKING]

KTR is delivered in 25 kg multi-ply paper bag. One pallet contains 900 kgs 36 bags. One 20 ft. container contains 18 metric tons.

3. [TRANSPORTATION& STORAGE STABILITY]

Transport and store the product protected against the influence of water and UV-radiation at temperature of maximum 30deg.C.
When store under proper condition, storage stability is of one year.

4. [SAFETY& HANDLING]

Ketonic Resin is not classified as a dangerous material. Refer to our MSDS.

5.[APPLICATIONS]

Nitro-cellulose paints, vinyl chloride copolymer systems, adhesives, printing inks, ball-point pen pastes, toner, pigment, pastes, adhesives, hot melt compounds, PU-systems, varnish paints for surface treatment of wood, metal and paper.

[PRINTING INKS]

Ketonic Resins (KTR) have good solubility in ethanol and fairly high softening point. These properties help KTR's use in flexographic and gravure printing inks. It imparts gloss, enhances adhesion, increases solids content and improves drying properties. It is used in various kinds of printing inks made from alkyd resins, maleic resins, nitro cellulose, alkyd resins and polyvinyl butyral.

[BALL-POINT PEN INKS]

KTR grades, particularly KTR 123 is used in ball-point ink pastes because of its unique property of quick setting after drying. It has high hydroxyl value which gives good thickening effect through hydrogen bonding and this property prevents inks from drying out, at the same time, helps quick setting after drying.

[NITROCELLULOSE PAINTS]

In nitrocellulose paint, KTR grades improve adhesion and polishing characteristic. All KTR grades are suitable for all types of nitrocellulose paints.

[PAPER VARISHES]

KTRs are used in paper varnishes for their brightness, light fastness and neutral properties.

[PUR-SYSTEMS]

Free hydroxyl groups in KTR react easily with isocyanates. This property is utilized for its use in PUR systems.

[HOT MELT COMPOUNDS]

KTRs are used to control melt viscosity and hardness of cooled mass of hot melt compound used to protect equipment parts.

[ADHESIVES]

KTRs are used in isocyanate based adhesive systems and also in water clear and radiation cured adhesives.

[VINYL CHLORIDE - COPOLYMER SYSTEMS]

In vinyl chloride copolymer systems KTR improves processibility.

6. Specifications

SR. NO.	**CHARACTERISTICS**	**SPECIFIED VALUE**	**SPECIFIED VALUE**	**SPECIFIED VALUE**	**SPECIFIED VALUE**
1.	**APPEARANCE**	White Prills	White Prills	White Prills	White Prills
2.	**SOFTENING POINT (^{0}C) (DIN 53181) CAPILLARY METHOD**	85 – 95	95 - 105	105 - 115	105 – 115
3.	**VISCOSITY OF 50% SOLN. IN BUTYL ACETATE AT 25^{0}C (cps)**	30 – 60	75 - 95	100 - 120	110 – 140
4.	**MOISTURE (%W/W) (Max.) (DIN 51777-1)**	3.0	3.0	3.0	3.0
5.	**ACID VALUE (mgKOH/gm) (Max.) (DIN 53402)**	0.3	0.2	0.2	0.2
6.	**HYDROXYL VALUE (mgKOH/gm)** **i) OLD METHOD** **ii) (DIN 53240 Mod.) DIN 53240 - 2**	 165 – 190 180 – 210	 170 - 200 210 - 240	 180 - 210 220 - 250	 200 - 230 250 - 280
7.	**IODINE COLOUR NO. OF 50% SOLUTION IN BUTYL ACETATE (Max.) (DIN 6162)**	2.0	2.0	2.0	2

7. Solubility

[SOLUBILITY]

SOLUBILITY		Synthetic Resins	
	KTR-100	KTR-118	KTR-123
Aliphatic hydrocarbons	-	-	-
Aromatics	+	+	+
Ethers	+	+	+
Alcohols	++	++	++
Esters	++	++	++
Glycol ethers	++	++	++
Ketones	++	++	++

Solubility was determined up to 50 % by wt.

++ = soluble + = limited solubility - = insolubile

SAFETY AND HANDLING

Ketonic Resin is not classified as a dangerous material. Refer to our MSDS.

8. Compatibility

COMPATIBILITY		Synthetic Resins	
	KTR-100	KTR-118	KTR-123
Acrylic Resins	-	-	-
Calcium Resonates	+	+	+
Hydrocarbon Resins	+	+	+
Aldehyde Resins	++	++	++
Alkyd Resins	++	++	++
Carbamide Resins	++	++	++
Cyclized Rubber	++	++	++
Epoxy Resins	++	++	++
Glycerine Ester Resins	++	++	++
Ketone Reins	++	++	++
Maleic Resins	++	++	++
Melamine Resins	++	++	++
Nitrocellulose	++	++	++
Phenolic Resins	++	++	++
Phthalic Resins	++	++	++
Polyester Resins	++	++	++
Rasols, Non-Plasticized	++	++	++
Rosin-Modified Resins	++	++	++
Styrene-Allylalcohol Copolymers	++	++	++
VC Copolymers	++	++	++
Zinc Resonates	++	++	++

9. Comparision with Competing Products

Comparision of KTR 100, KTR 118 & KTR 123 With Competing Products

Company	Suparna	RESINE ITALIANE	LEUNA	EVONIK	LAWTER					
Product	KTR-100	KTR-118	KTR-123	RESANON 121	L,RESIN	CA	SK	K-1717B	K-1717	K-1717HMP
Appearance	White Prills	White Prills	White Prills	-	Yellow Prills	Gritty White powder	Palletized	prills/Powder	Yellow prills/Powder	Pale Amber
Softening point (0C)	95-105	105-115	105-115	110-110	95-105	95-108	110-120	95	100	100
Moisture % (Max)	3.0	3.0	3.0	-	4.0	<= 4.0	-	-	-	-
Acid Value (mgKOH/gm) Max	0.2	0.2	0.2	< 1	0.3	<0.3	<1	-	-	-
OH Value	170-200	180-210	200-230	240-280	-	200	325	135	270	270
Lodine No. Max.	2.0	2.0	2.0	1.4-1.6	2.0	-	-	-	-	-
Vls(50%)in Butyl Acetate at 25^{0}C (cps)	75-95	100-120	110-140		35-60	-	-	-	-	-

COMPARISON OF COMPATIBILITY & SOLUBILITY WITH COMPETING PRODUCTS

Company	Suparna	RESINE ITALLANE	LEUNA	EVONIK	LAWTER					
PRODUCT GRADE	KTR-100	KTR-118	KTR-123	RESANON 121	L,RESIN	CA	SK	K-1717B	K-1717	K-1717HMP
Nitrocellulose	++	++	++	++	++	++	++	++	++	++
Chlorinated Rubber	++	++	++	+	++	++		++	++	++
Vinyl Chloride Polymer	++	++	++	+	++	++		++	++	++
Polyacrylates	+	+	+	+	+	+	+	+	+	+
Urea Resins	++	++	++	++	++	++	++	++	++	++
Melamine Resins	++	++	++	++	++	++	++	++	++	++
Alkyd Resins	+	+	+	+	+	+	+	+	+	+
Alcohols	++	++	++	++	++	++	++	++	++	++
Ester	++	++	++	++	++	++	++	++	++	++
Ketones	++	++	++	++	++	++	++	++	++	++
Aramatics	+	+	+	+	+	+	+	+	+	+

Solubilty was Determined up to 50% by Wt. **++ = soluble, + = limited solubillty, - = insoluble**