

K-FLEX® Series

For Polyester Cast Elastomers

K-FLEX polyesters diols offer several advantages over typical raw materials used for 2K PU cold cast elastomer applications.

K-FLEX Property


- Liquid at room temperature
- Low water content (<0.1%)
- Low color and refractive index
- No acid functionality
- Aliphatic, linear, saturated molecules
- Only primary hydroxyl groups
- Excellent compatibility

Advantage

- Easy to handle
- Minimizes out gassing problems
- Ideal for optically clear systems
- No acid catalytic hydrolysis of cast polyester urethanes
- Excellent exterior durability
- Fast reactivity
- Compatibilizes otherwise incompatible materials

Product Selection

In this study of physical and mechanical properties, K-FLEX polyester diols were evaluated in a clear cast elastomer based on HDI cyclic aliphatic isocyanate trimer (NCO:OH 1.05:1.0). The results from King Industries' mechanical properties study are:

Harder  Softer	K-FLEX XM-337	Highest tensile strength, most energy deflective, only product with a Young's modulus
	K-FLEX 188	Most versatile, balance of tensile strength, modulus and high Bayshore rebound
	K-FLEX A308	Balance of good performance and low viscosity
	K-FLEX A307	Similar properties to PPG 400 and DEG adipate with lower NCO demand and better UV resistance
	K-FLEX XM-332	Lowest viscosity, most energy absorbing

PHYSICAL PROPERTIES

Typical Properties						Competitive Technology		
	<i>XM-337</i>	<i>188</i>	<i>A307</i>	<i>A308</i>	<i>XM-332</i>	PPG 400	DEG Adipate	Tone™ 0201
Appearance	Clear	Clear	Clear	Light	Light	Light	Light	White waxy
Hydroxyl, Eq. wt.	260	244	400	216	212	200-234	249	265
Viscosity, cP	70,000 @ 25°C	9,800 @ 25°C	5,400 @ 25°C	1,500 @ 25°C	450 @ 25°C	151 @ 16°C	500 @ 25°C	70 @ 55°C
APHA Color	20	20	20	20	20	75 max	150 max	N/A
Refractive Index	1.4974	1.4927	1.4832	1.4810	1.4672	1.4459	1.4696	1.4679

MECHANICAL PROPERTIES

Mechanical Properties	ASTM Method						Competitive Technology		
		<i>XM-337</i>	<i>188</i>	<i>A308</i>	<i>A307</i>	<i>XM-332</i>	PPG 400	DEG Adipate	Tone™ 0201 ³
Tensile Strength ¹ , psi	D412	4,200	3,100	2,100	790	780	660	860	640
Strain, %	D412	94	137	134	83	50	60	59	30
Shore Hardness	D2240	73 D	65 D	85 A	73 A	76 A	20 D	N/A ²	28 D
Bayshore Rebound	D2632	46	41	30	3	4	7	N/A	42
Tg, °C of Elastomer	AR-2000 Rheometer	45	30	12	-6	-8	N/A	N/A	N/A

¹Values measured at max

²N/A - Not available

³Tone™ is a trademark of Dow Chemical Company