ExxonMobil

Adjust PVC plastisol viscosity in your application with Isopar and Exxsol fluids

Offering optimal processability and performance balance for your PVC plastisol applications

Plastisol spread coating processes are characterized by very high shear rate, requiring low initial plastisol viscosity. Viscosity modifiers achieve target viscosity faster, which provides a processing advantage by increasing the rate of pumping and spread coating. Viscosity control enables consistent spreading and formulation stability during application, which is particularly beneficial for high pressure processes. Good viscosity control is a predictor of permanence and ultimately reduces overall production cost.

Key benefits

High efficiency:
Achieve target viscosity at lower dosage levels

Safer work environment, low VOC-product:
Low aromatics and odor

Lower overall production cost:
Improved plastisol stability and performance

PVC plastisol viscosity and viscosity stability dictate the amount of paste that is picked-up to cover a substrate. PVC Plastisol viscosity is a function of the formulation ingredients used:

- E-PVC resin type and K-value
- Plasticizer type and level (inclusive of fluids)
- Filler ($CaCO_3$) level

Key fluid requirements are:

- Efficiency in reducing initial plastisol viscosity
- Minimal impact on plastisol pre-gelation and gelation °T
- Boiling point > process °T to avoid bubble formation in finished product
- Sufficiently volatile for finished products with low odor and low VOC
- Acceptable compatibility with PVC to avoid greasy feel

Typical addition levels: 5 to 15 parts per 100 parts of PVC resin.

Typical properties	Method	Isopar™ L fluid	Exxsol™ D80 fluid
IBP - DP (°C)	ASTM D86	190 – 207	207 – 240
Flash point (°C)	ASTM D93	63	83
Evaporation rate n-BuAc = 100	Calculated	3.6	1.2
Density at 15°C (kg/dm3)	ASTM D4052	0.766	0.800
Aromatics (wt%)	AMS 140.31	0.002	0.002

Source: ExxonMobil "Fluids at a glance" brochure

Attributes	Eastman TXIB™ additive	Isopar fluids	Exxsol D fluids
Efficiency	=	++	+++
Impact on gelation	=	=	—
Weight loss during processing	=	=	+/—
Ease of air release	=	+	++
Compatibility with PVC	=	=	—
Line/equipment cleaning	=	++	+++
Odor	=	++	+
Classified as Reproductive Toxicant Category 2	Yes	No	No

Source: ExxonMobil internal assessment

Isopar and Exxsol hydrocarbon fluids are just a few of the ExxonMobil chemical solutions to help optimize your PVC plastisol formulation.

Technical question?
Connect directly with our technical experts at fluidsanswerperson@exxonmobil.com

Visit us for more information:
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