

Ultramoll® III

Ultramoll® III is a highly viscous polymer acrylonitrile-butadiene rubber (NBR), plasticiser for a large number of polymers, e.g. polyurethane (PU) etc. polyvinyl chloride (PVC), VC copolymers,

Chemical composition:	adipic polyester
CAS Reg. No.:	24937-93-7
Supply form:	almost colourless, highly viscous liquid
Health and safety information:	Relevant safety data and advice and information on the necessary warning labels can be found in Safety Data Sheet No. 033557.
Labelling required by law:	Ultramoll III does not require labelling according to the relevant German and EU regulations on dangerous goods transport.

Specified properties:

Property	Nominal value	Unit	Test method
Refractive index n_{D20}	1.4695 ± 0.0005		DIN EN ISO 6320 (method based on)
Acid value	max. 1.0	mg KOH/g	DIN ISO 2114
Hazen colour value	max. 150		DIN ISO 6271
Viscosity at 50 °C	$1,150 \pm 150$	mPa s	DIN 53 015

Additional product information:

Property	Typical value	Unit	Test method
Density at 50 °C	approx. 1.105	g/cm ³	DIN 51 757
Saponification number	approx. 520	mg KOH/g	DIN 53 401
Pour point	approx. – 15	°C	ISO 3016
Flash point (open cup)	approx. 280	°C	ISO 2592
Water content	max. 0.1	%	DIN 51777
Dissolution temperature	approx. 177	°C	DIN 53 408 (method based on)

PLASTIC ADDITIVES



Storage stability

When stored in its sealed original container, Ultramoll III has a shelf life of 1 year.

Solubility

Soluble in all common organic solvents, practically insoluble in water, aliphatic hydrocarbons and vegetable, animal and mineral oils.

These raw material properties are typical properties and, unless specifically indicated otherwise, are not to be considered as delivery specification.

Packaging

Road tankers
Polyethylene containers, contents 1,000 kg
Drums, contents 220 kg

Instructions and recommendations for use

Density and viscosity are important variables determining storage, the design of the

storage tanks and the dimensions of pipelines and delivery pumps. Figures 1 and 2 show the values for these properties.

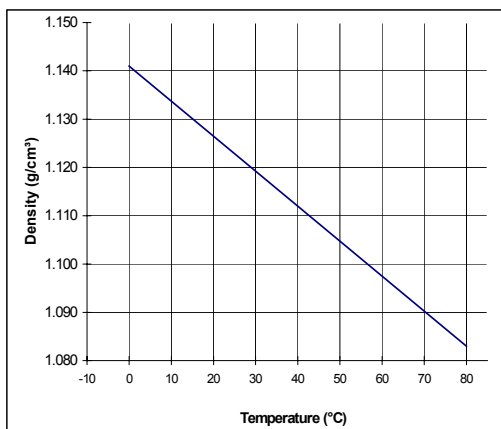


Fig. 1: Density (DIN 51 757) of Ultramoll III as a function of temperature

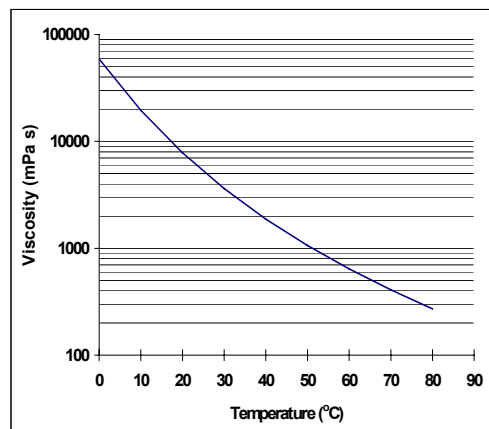


Fig. 2: Viscosity (DIN 53 015) of Ultramoll III as a function of temperature

General properties

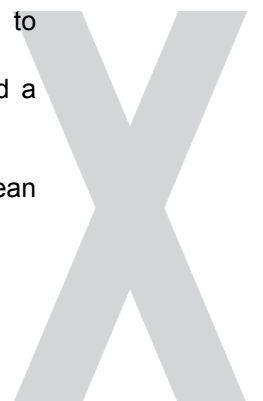
Ultramoll III imparts:

- to plasticised PVC compounds good extraction resistance to oils, aromatic-free petrol, aliphatic hydrocarbons and bitumen owing to its high molecular weight (Table 1)
- to plasticised PVC compounds good plasticiser migration resistance in contact with other plastics and coatings (Table 2)

- outstanding extraction resistance in contact with fatty foodstuffs
- to NBR compounds good resistance to swelling and plasticiser migration
- to hot-melt adhesives good flexibility and a short drying time during manufacture

Ultramoll III meets a large number of European and US food regulations.

PLASTIC ADDITIVES



Ultramoll III is highly compatible with PVC at a ratio of up to 35 pbw to 65 pbw PVC or 54 pbw to 100 pbw PVC

Table 1: Change in weight of a PVC/Ultramoll III compound after immersion in various media, conditioned and unconditioned:

	Change in weight (%) after immersion			
	10 days un-conditioned	20 days un-conditioned	30 days un-conditioned	30 days conditioned 14d/23°C/50% rel. moisture
Isooctane at RT	+ 0.48	+ 0.65	+ 0.90	+ 0.33
Isooctane / Toluene (70/30) at RT	+ 14.16	+ 13.89	+ 13.99	+ 0.43
ASTM Oil 1 at RT	- 0.04	- 0.10	- 0.20	- 0.21
ASTM Oil 1 at 60 °C	- 0.79	- 1.11	- 0.98	- 0.92
Olive oil at RT	- 0.58	- 0.72	- 0.85	- 0.88
Olive oil at 60 °C	- 4.46	- 5.59	- 6.14	- 6.08

Guide recipe

65.0 pbw S-PVC, K value 70
 35.0 pbw Ultramoll III
 1.5 pbw Ba/Zn stabiliser
 3.0 pbw ESO

Processing conditions:

Mixing roll: 165 °C / 10 min
 Press: 170 °C / 10 min

Table 2: Plasticiser migration (to DIN 53 405) from a PVC/Ultramoll III compound into various thermoplastics:

Plasticiser migration into		Change in weight (%) after 14 d / 70°C	
		Receiving film	Discharging film
Rigid PVC	PVC	+ 0.5	- 0.6
Standard polystyrene	PS	+ 0.1	- 0.1
Styrene-acrylonitrile	SAN	+ 0.8	- 1.0
Styrene-butadiene (impact-resistant)	SB	+ 0.1	- 0.1
Acrylonitrile-butadiene-styrene	ABS	+ 0.4	- 0.4
Low-density polyethylene	LDPE	+ 0.2	- 0.3

PLASTIC ADDITIVES



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35.0 pbw Ultramoll III
1.5 pbw Ba/Zn stabiliser
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Processing conditions:

Mixing roll: 165 °C / 10 min
Press: 170 °C / 10 min

Applications

Ultramoll III is used for a large number of articles based on polyvinyl chloride (PVC), acrylonitrile-butadiene rubber (NBR) and PU, which are expected to have very good resistance to oil, grease, petrol and bitumen.

industry, milking hoses, blown film (clingfilm and microwave film) for packaging foodstuffs

Ultramoll III is used in applications where foodstuff regulations and recommendations need to be met.

Injection moulding

Boots, shoes and soles for applications requiring petrol and oil resistance, safety shoes, film for the automotive, packaging and office article industry

Typical fields of application are:

Coatings industry

Oil-resistant protective clothing for industrial use, oil and petrol-resistant tarpaulins

Extrusion

Oil and petrol-resistant film, hoses, cables and conveyor belts, conveyor belts for the foodstuffs

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Ultramoll

The above formulation is intended solely as a guide for our business partners and others interested in our products. As the conditions of use and application of the suggested formulation are beyond our control, it is imperative that it be tested to determine, to your satisfaction, whether it is suitable for your intended use(s) and application(s). This application-specific analysis at least must include testing to determine suitability from a technical, as well as health, safety and environmental standpoints. Further, although the ingredients, quantities thereof and properties of compounds or finished goods mentioned herein reflect our recommendation at the time of publication, this guide may not be subject to continuous review and/or updating, and you agree that use is undertaken at your sole risk. All information is given without warranty or guarantee, and it is expressly understood and agreed that you assume, and hereby expressly release us from, all liability, in tort, contract or otherwise, incurred in connection with the use of this guide.

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