

ISCATHIX[®]
Rheological Additives



ISCA was established in 1998 with the aim of supplying high quality speciality chemicals across a broad spectrum of industry.

Our commitment to provide expert technical support and product innovation, coupled with a professional, flexible and friendly approach to customer service, has seen ISCA quickly establish itself as a leading manufacturer and supplier in a number of fields.

Based in Newport, South Wales, we have extensive warehouse facilities throughout the UK and Europe enabling us to offer prompt deliveries from stock, as well as a full export service to overseas customers. From our purpose-built laboratories, our experienced technical team offers a full support service: providing formulatory advice, product development, raw material evaluation and end-use application testing.

In 2004 ISCA launched a range of rheological additives for the coatings market.

Our product range encompasses both organowax and organoclays, as well as polyethylene wax, fumed silica, sodium polyacrylate gels, modified acrylic copolymers, and so on. Whatever the coating, be it water-borne, solvent-based or solvent-free, ISCA can provide the ideal rheological modifier to satisfy your requirements.

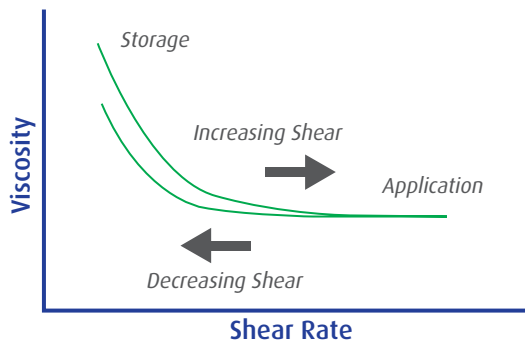
ISCA can offer the benefits of many years cumulative experience and expertise in the coatings industry, and we welcome the opportunity to work closely with customers to solve rheological problems - either using our existing additives, or with specially designed products.

This brochure gives a brief summary of the IscaThix® range of rheology modifiers for paints and inks. These polyamide and castor based additives can be used to impart thixotropic properties into solvent-based and solvent-free coatings. We recommend that customers also check our web site at www.iscauk.com for further information and updates on new products.

Rheology Control

Rheology is the study of the change in form and the flow of a material. When the material is a liquid, the flow property is known as viscosity. The speed at which a liquid can flow is governed by its viscosity, i.e. its internal friction – the greater the friction, the greater the amount of force required to make the liquid flow.

There are several types of flow behaviour, characterized by the way a liquid's viscosity changes in response to varying shear rate (the speed at which the liquid moves under a given force). A thixotropic liquid shows a time dependant change in viscosity under conditions of constant shear rate. When the shear force is removed, e.g. after a paint has been applied, a gradual regain in viscosity is observed.



The introduction of thixotropy into a coating system improves both its bulk properties, as well as its application characteristics.

Storage

- Improved in-can appearance
- Anti-sedimentation
- Minimises syneresis



Drying

- Enhanced flow and levelling properties
- Effective sag control

Application

- Better brushability
- Increased coverage over porous surfaces
- Greater film build and edge cover

The Iscathix® range of rheological additives are the ideal way to impart thixotropy into solvent-borne and solvent-free coatings. Iscathix® additives can be used in a wide variety of applications (see product selection chart – page 5).

Iscathix® rheological additives are hydrogenated castor oil and polyamide based waxes, supplied in micronised form. When the wax is dispersed in solvent, and subjected to moderate heat, the wax particles swell. Adequate shear forces are required to reduce the swollen particles to a suitable size and shape - microscopic 'string-like' particles. Iscathix® additives should therefore be added during the grinding stage of paint production.

When the production process has finished, and the paint is canned off (i.e. the shear force has been removed), the wax 'strings' form a fibrous 3 dimensional network that is held together by hydrogen bonds. As a result, the internal friction of the paint is increased, providing it with anti-settling properties. When a further shear force is applied (e.g. brushing, spraying, rolling, etc.), the 3 dimensional structure breaks down, leading to a reduced viscosity and improved flow and levelling character. Finally, as the wax network begins to rebuild after the paint has been applied, a gradual increase in viscosity is responsible for the coating's anti-sagging ability.

Iscathix® additives have several advantages over other types of rheological agent, such as organoclays or fumed silica. Iscathix® products provide true thixotropy to a coating, whereas many other products only provide pseudoplasticity (sudden regain in viscosity when the shear force is removed). Furthermore, the shear thinning behaviour of Iscathix® is generally superior to that provided by other technologies.

Iscathix® additives have minimal effect on gloss and do not affect the coating's durability. They do not require chemical activation, and are not particularly sensitive to other raw materials. If preferred, Iscathix® additives can be incorporated into a paint via a pre-gel technique.

ISCATHIX® T

IscaThix® T is a 100% active rheological additive based on a modified hydrogenated castor oil wax, and is suitable for use in a wide range of coating systems.

Technical Specification

Appearance	Fine off-white powder
Density at 25°C	1.03 g/cm ³
Bulk Density	0.52 g/cm ³
Melting Point	Approx. 140°C
Particle Size	99% <45 microns

Product Benefits

- Very good sag resistance / pigment suspension properties
- Improved brushability
- Good storage stability at ambient temperatures
- Minimal gloss reduction
- Ease of incorporation
- Greater tolerance to strong solvents and higher process temperatures compared with pure HCO based additives

Applications

Air-drying industrial coatings, architectural paints, solvent-free systems, chlorinated rubbers, 2K epoxy primers and top-coats, road marking paints, thermoplastic acrylics, isocyanate-free 2K acrylics, etc.

Recommended level of addition: 0.2 – 1.5%, calculated on total formulation.

Incorporation

IscaThix® T should be incorporated during the pigment dispersion stage of coating manufacture – ideally, using high speed dispersing equipment. When appropriate temperature and shear conditions are obtained, a dwell time of 20 - 30 minutes should be observed. The activation temperature for IscaThix® T will depend on which solvents are being used, but should be within the range 35-70°C.

ISCATHIX® ISP

IscaThix® ISP is a 100% active, hydrogenated castor oil based rheological additive, designed for use in aliphatic solvent based coatings and solvent-free systems.

Technical Specification

Appearance	Fine off-white powder
Density at 25°C	1.02 g/cm ³
Bulk Density	0.52 g/cm ³
Melting Point	Approx. 85°C
Particle Size	99% <45 microns

Product Benefits

- Very good sag resistance / pigment suspension properties
- Improved brushability
- Good storage stability at ambient temperatures
- Ease of incorporation
- Minimal gloss reduction

Applications

Architectural paints, woodstains, air-drying industrial coatings, 2K solvent-free epoxy systems, textile backings, powder coatings, cosmetics, sealants, caulks, etc.

IscaThix® ISP is not recommended for use with strong / polar solvents.

Recommended level of addition: 0.2 – 1.5%, calculated on total formulation.

Incorporation

IscaThix® ISP should be incorporated during the pigment dispersion stage of coating manufacture – ideally, using high speed dispersing equipment. When appropriate temperature and shear conditions are obtained, a dwell time of 20 - 30 minutes should be observed. The activation temperature for IscaThix® ISP will depend on which solvents are being used, but should be within the range 35-55°C.

ISCATHIX® SR

Iscaithix® SR is a 100% active, organic amide based rheological additive, suitable for use in a wide range of coatings. Unlike hydrogenated castor oil based products, Iscaithix® SR is very tolerant to strong solvents and high process temperatures.

Technical Specification

Appearance	Fine off-white powder
Density at 25°C	1.0 g/cm ³
Bulk Density	0.51 g/cm ³
Melting Point	Approx. 125°C
Particle Size	99% <25 microns

Product Benefits

- Very resistant to seeding and false body effects
- Excellent sag resistance / pigment suspension properties
- Improved brushability
- Minimal gloss reduction
- Improves storage stability, even at elevated temperatures
- Ease of incorporation

Applications

Iscaithix® SR can be used to impart thixotropic behaviour into a wide range of systems, including: general industrial coatings, 2K epoxy primers and top-coats, 2K polyurethanes, chlorinated rubbers, thermoplastic acrylics, 2K isocyanate-free acrylics, road marking paints, high solids systems, floor paints, adhesives, sealants, etc.

Recommended level of addition: 0.5 – 2.0%, calculated on total formulation.

Incorporation

Iscaithix® SR should be incorporated during the pigment dispersion stage of coating manufacture – ideally, using high speed dispersing equipment. When appropriate temperature and shear conditions are obtained, a dwell time of 20 - 30 minutes should be observed. The activation temperature for Iscaithix® SR will depend on which solvents are being used, but should be within the range 40-65°C.



ISCATHIX® Rheological Additives - Selection Chart

The choice of which Iscathix® product to use for a particular application will depend on the polarity of the solvent system, and the process temperature of the paint during manufacture. The following table gives a general guide to selection:

		ISCATHIX® SR	ISCATHIX® T	ISCATHIX® ISP
Decorative	Architectural Alkyd Paints	✓	✓✓	✓✓
	High Solids Alkyd Paints	✓✓	✗	✗
	Woodstains / Wood Varnishes	✓	✓✓	✓✓
	Sealers, Undercoats & Primers	✓	✓✓	✓✓
Industrial	Heavy Duty / Marine Coatings	✓✓	✓	✗
	General Industrial Paints	✓✓	✓	✗
	Air Drying Industrial Paints	✓✓	✓✓	✓
	2K Polyurethane Systems	✓✓	✓	✗
	Chlorinated Rubber Paints	✓✓	✓✓	✗
	Nitrocellulose Lacquers	✓✓	✓	✗
	Alkyd-Amino Acid Cat. Coatings	✓✓	✗	✗
	Hammer Finishes	✓	✓	✓
	Solvent-Free Epoxy Coatings	✓✓	✗	✓
	Aerosol Paints	✓	✓	✗
	Printing Inks	✓	✗	✓
	Road Marking Paints	✓	✓	✓
Miscellaneous	Powder Coatings	✓	✓	✓✓
	Sealants, Mastics & Caulks	✓✓	✓	✓
	Adhesives	✓✓	✓✓	✓✓
	Fillers, Putties & Stoppers	✓✓	✗	✓✓
	Cosmetics	✓	✗	✓✓
	Textile Coatings	✗	✗	✓✓
	PVC Plastisols / Organosols	✓	✓	✓

- ✓✓ **Recommended**
- ✓ **Suitable for Use**
- ✗ **Not Suitable for Use**

Technical Service

ISCA support their product range with a telephone advisory service and in-house testing facilities. Please contact any member of our team for further details.

Whilst the information contained herein is accurate to the best of our knowledge, no warranty is either expressed or implied.



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