EGASOL MD

Character	Levelling agent with strong migration and synchronisation effect for dyeings PES Suited for the automotive sector
Chemical Structure	Aromatic carboxylic acid ester
Appearance	Liquid, yellow to yellow-brown, clear
Ionic Character	Anionic
pH-Value of a 10 % Solution	4.8 – 7.9
Specific Weight at 20 °C	1.1
Stabilities	EGASOL MD is stable to the auxiliaries and chemicals used for PES dyeing. The product is sensitive to frost to a certain extent; changes occurring at low temperatures disappear on warming and after thorough stirring.
Storage	On proper storage in closed original containers, the product is stable for at least 12 months.

The above given values are product describing data. Please consult the 'delivery specification' for binding product specifications. Further data about product properties, toxicological, ecological data as well as data relevant to safety can be found in the safety data sheet.

Properties

EGASOL MD is a low foaming levelling agent for PES and modified PES in the HT range. EGASOL MD is also suited as migration agent for PAN.

The product has levelling, dispersing, washing and migrating properties.

EGASOL MD has an affinity to dye and fibre. Differences caused by the material are levelled out to a large extent.

The product accelerates diffusion and is therefore highly suitable for dyes which hardly migrate. For the automotive field we recommend adding 0.5 g/l. With this amount we could not observe any impact on the light fastness. For safety reasons product residues should be eliminated by a subsequent dry heat treatment at ≥ 160 °C.

Application Technique

Diluting Instructions

EGASOL MD can be emulsified by pouring 5 to 10 times the amount of warm water (60 – 70 °C) over it and stirring thoroughly. The stock emulsion produced like this can be used right away. Cooled down stock emulsions deposit and have to be stirred thoroughly before use.

Application Fields

EGASOL MD has proven very well for dyeing wovens made of PES on HT piece dyeing machines. It is highly suited for Trevira CS, PES microfibres and CDP (Coolmax = PES for cationic dyeing). It boosts migration of PAN dyeings. However, SARABID OL has to be added for preventing precipitations in the presence of cationic dyes.

EGASOL MD can be applied for all common dyeing procedures on PES and PAN such as yarn dyeing, jet and overflow dyeing.

There is a high apparatus cleaning effect during dyeing compared to products with pure dye affinity.
The boiling cycles can be extended very much compared to dispersion/levelling agents with pure dye affinity because the product has a detaching effect on the dye and on the preparations.

Recommendation for Use

Dyeing of PES

Normally, the application amounts of the product are as follows:

0.5 – 4.0 % EGASOL MD.

The pre-emulsified product is added to the warm dyebath (50 - 60 °C) together with the other chemicals and auxiliaries. The dispersion dyes are added after a short pre-run and then heated up to 80 - 90 °C. After having reached this temperature, heat up with 1.5 °C/min until a dyeing temperature of 130 °C is achieved. Light colours are dyed for 20 - 30 min, medium to dark shades for 30 - 40 min at the final temperature, so that an optimum dye fixation is achieved.

For dyeing automotive parts we recommend a maximum application amount of 1.0 % EGASOL MD. Good results are achieved using a combination of 1.0 % EGASOL MD and 1.0 – 2.0 % CHT-DISPERGATOR XHT-S. The making-up should preferably be finished with a reductive cleaning step. For safety reasons product residues should be eliminated by a subsequent dry heat treatment at ≥ 160 °C.

Application proposal for PES

HT beam

2.0	-	3.0	%	CHT-DISPERGATOR XHT-S
1.0	-	2.0	%	EGASOL MD

Yarn

1.0	-	3.0	%	CHT-DISPERGATOR XHT-S
0.5	-	1.0	%	EGASOL MD

Jet/ greige dyeing

1.5	-	2.0	%	CHT-DISPERGATOR XHT-S
0.5	-	1.0	%	EGASOL MD

EGASOL MD in combination with CHT-DISPERGATOR XHT-S gives very good results on critical yarn dyeings. It boosts dye penetration of the intersection points on very tightly wound, big cones. Particularly turquoise and yellow combinations benefit from the distinct synchronisation effect. Shorter process times can be realised on the jet by higher heating rates and shorter migration phases. Greige dyeing is possible on knitwear. Differences in the fixation degree can be largely compensated with EGASOL MD.

Dyeing of Trevira CS

The dyeing temperature should not exceed 120 °C to avoid a loss in tensile strength. Yarn dyeings on X cones have to be effected at a maximum temperature of 115 °C because of the higher fibre shrinkage.
The higher absorption rate compared with common PES must be compensated with lower heating rates and higher amounts of levelling agent. Moreover, because of the lower glass transition point at 80 – 85 °C the heating speed should be reduced or dwelling should be done for 10 min at 80 °C.

When dyeing piece goods in rope form we suggest adding 1.0 – 2.0 % BIAVIN BPA as crease prevention agent. BIAVIN BPA can be totally washed out afterwards and does therefore not reduce the flame retardancy.

Initial temperature:	60 °C, 10 min
EGASOL MD	1.0 – 3.0 %
CHT-DISPERGATOR XHT-S	0.5 – 2.5 %
NEUTRACID BO 45	pH value 4.5 – 5.0
BEMACRON dye -	
Homogenizing:	60 °C, 10 min
Heat up with 1 °C/min:	80 °C, 30 min
Dyeing:	80 °C, 10 min
Heat up with 1 °C/min	120 °C, 40 min
Dyeing:	120 °C, 40 min
Cool down with 3°C/min:	70 °C, 17 min
Drain	

A reductive aftercleaning process should also be done on light shades. Even slight dye residues on the fibre can minimize its flame retardant properties.

As aftercleaning recipe for Trevira CS we recommend:

Initial temperature:	60 °C, 10 min
REDULIT F	1.0 %
CHT-DISPERGATOR XHT-S	1.0 %
NaOH 38 °Bé	4.0 ml/l
Heat up with 2°C/min:	80 °C, 10 min
Reductive cleaning:	80 °C, 20 min
Drainage, neutralization	

Recipe for levelling out Trevira CS

Initial temperature:	60 °C, 10 min
EGASOL MD:	3.0 %
CHT-DISPERGATOR XHT-S	2.0 %
NEUTRACID BO 45:	pH 4.5 – 5.0
Heat up with 2°C/min:	120 °C, 30 min
Levelling out:	120 °C, 20 min
Cool down with 2 °C/min:	80 °C, 20 min
Drainage, rinse hot and cold	

Please note

In burning tests with dyed Trevira CS® articles we could not observe any significant impact on the flame retardant properties with any of the above mentioned recipes. For safety reasons, however, in case of doubt, last product residues should be eliminated in a subsequent dry heat treatment (at ≥ 160 °C).

Dyeing of PES/WO

EGASOL MD can be used as diffusion accelerator for PES/WO blends. Dyeings can be done between 98 and 120 °C.
At 98 °C and darker shades it is necessary to use higher quantities: 3.0 – 4.0 g/l. At 120 °C it is sufficient to use 1.0 g/l.

Dyeing proposal for PES/WO in one bath at 108 °C, dark dyeing

x	%	BEMACRON
y	%	BEMAPLEX / BEMACID
1.0	%	KERIOLAN A2N
2.0	g/l	MEROPAN KWS (wool protection)
4.0	g/l	EGASOL MD

pH 4.0 - 5.0 NEUTRACID BO 45

Application proposal for CDP (Coolmax = PES suitable for cationic dyeing) and PAN

The normal dyeing temperature is between 98 and 110 °C for fibre protection. Under these conditions a strongly migrating product such as EGASOL MD has to be applied.

Recipe for dyeing CDP fibres:

		2.0	%	SARABID OL (precipitation prevention agent)
		2.0	%	BIAVIN BPA (crease prevention agent)
0.0	-	1.0	%	TUBACRYL RI (retarder)
		6.0	%	Glauber's salt
		4.0	%	EGASOL MD (levelling agent)

pH 4.0 - 5.0 NEUTRACID BO 45

x	%	cationic dye

Initial temperature:	60 °C, 10 min
Homogenizing:	60 °C, 10 min
Heating with 1 °C/min:	80 °C, 30 min
Dyeing:	80 °C, 10 min
Heating with 1 °C/min:	110 °C, 30 min
Dyeing:	110 °C, 45 min
Cooling down with 2 °C/min:	70 °C, 20 min
Drainage	

Aftercleaning

2.0 % CHT-DISPERGATOR XHT-S

20 min, 60 °C, rinse warm and cold

PES/CDP blends are dyed at 110 – 120 °C and the amount of EGASOL MD is reduced to 2.0 – 3.0 %.

We reserve the right to modify the product and technical leaflet.

Our department for applied technique is always at your service for further information and advice.

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