

Evonik Liquid Dispersants and their use

Evonik Operations GmbH
Interface & Performance
Compounds



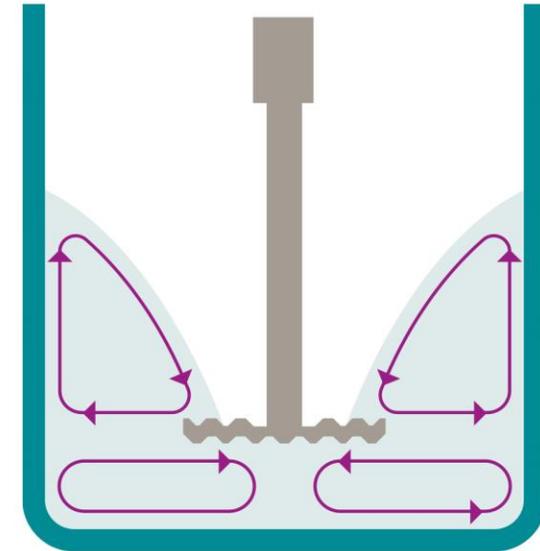
Production of Liquid Pastes

- **Continuous phase**

- Liquid carrier system
- Dispersant



- **Pigment**



Dispersing, e.g., via high-speed disperser

Recommendations

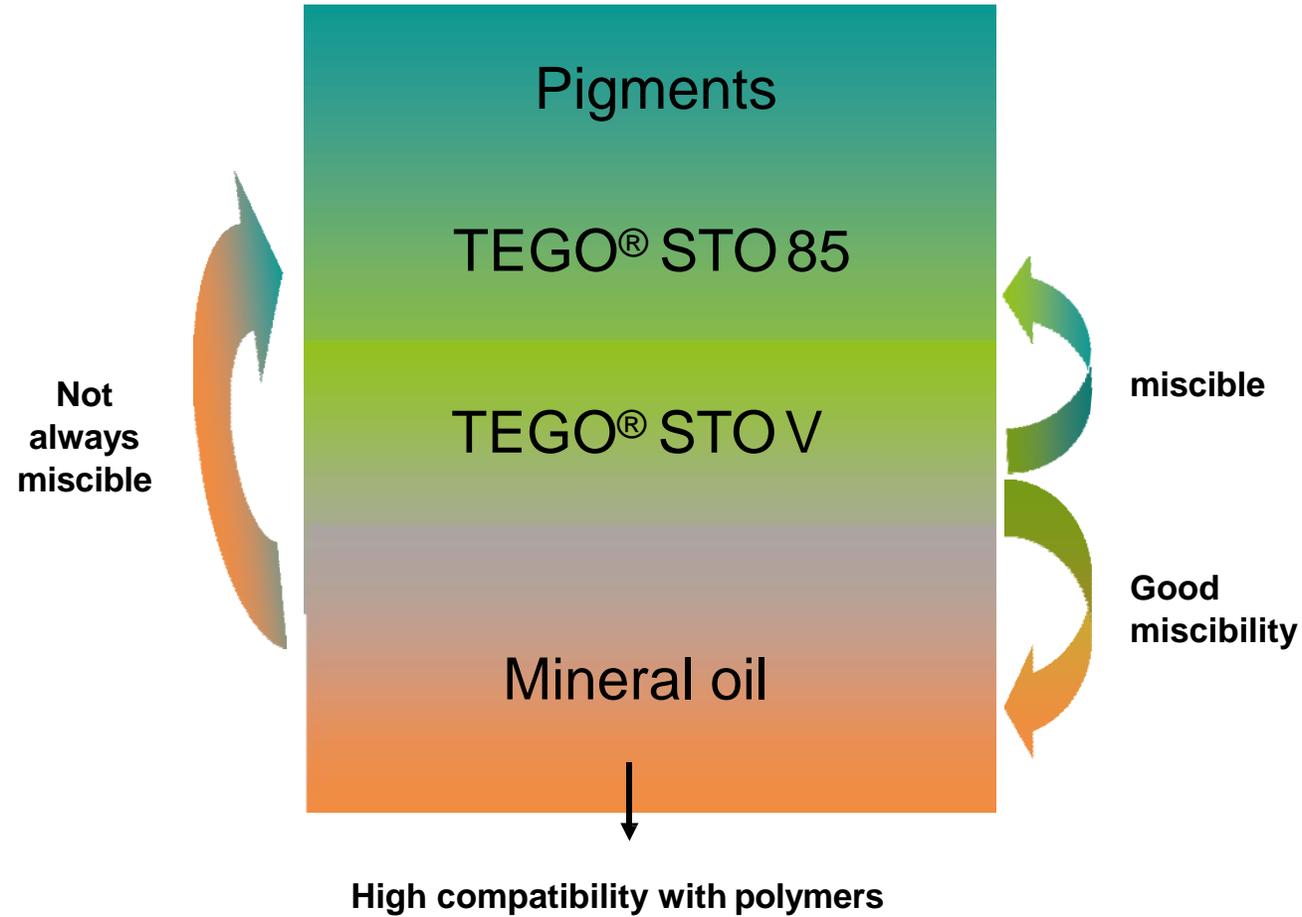
Liquid Dispersants

Continuous Phase		Liquid Dispersant	Application
Mineral or vegetable oil		TEGO [®] STO V TEGO [®] STO 85 V TEGOMER [®] DA 800	<ul style="list-style-type: none"> • Polyolefines, PS, ABS and PET • all kinds of pigments
Continuous phase = dispersing agent		TEGO [®] STO V TEGO [®] STO 85 V TEGOMER [®] DA 800	<ul style="list-style-type: none"> • Particularly PET, PC • all kinds of pigments
Phthalates (DINP, DOP, DIBP), adipates, citrates		TEGOMER [®] DA 626 TEGOMER [®] DA 646	<ul style="list-style-type: none"> • PVC • Organic pigments, carbon black
Polyols			<ul style="list-style-type: none"> • PU-foam, solvent-based TPU, PU-moulding materials
Polyether polyols	hydrophobic	TEGOMER [®] DA 626 (> 50.000 mPas)	<ul style="list-style-type: none"> • Carbon black (basic, acidic, neutral), organic pigments
	hydrophilic	TEGOMER [®] DA 646 (< 800 mPas)	<ul style="list-style-type: none"> • Carbon black (acidic, neutral, basic), organic Pigments
Polyester polyols		TEGOMER [®] DA 626	<ul style="list-style-type: none"> • Carbon black, organic pigments
Silicon oil		TEGOPREN [®] 6875 TEGOMER [®] M-Si 2650	<ul style="list-style-type: none"> • Silicone rubber, sealants

Liquid Dispersants and Miscibility with Continuous Phases

Mixture 1:1	Phthalate DINP	Mineral oil Aralux RP	Hydrophobic polyether polyol PPG 1000	Water
TEGO® STO 85	homogeneous	homogeneous	homogeneous	gelation
TEGO® STO V	homogeneous	homogeneous	homogeneous	shows smears
TEGOMER® DA 626	two phases	two phases	two phases	two phases
TEGOMER® DA 646	homogeneous	two phases	homogeneous	shows smears
TEGOMER® DA 800	two phases	two phases	two phases	homogeneous
TEGOPREN® 5885	two phases	homogeneous	two phases	two phases
TEGO® Surten W 111	homogeneous	homogeneous	homogeneous	two phases

Sorbitan Ester Derivates - Solubility



Formulations for Liquid Pastes

Example 1

Polyether polyol (PPG 1000) 70 %

TEGOMER® DA626 10 %

Carbon Black 20 %

Printex U (neutral)

Printex 60 (basic)

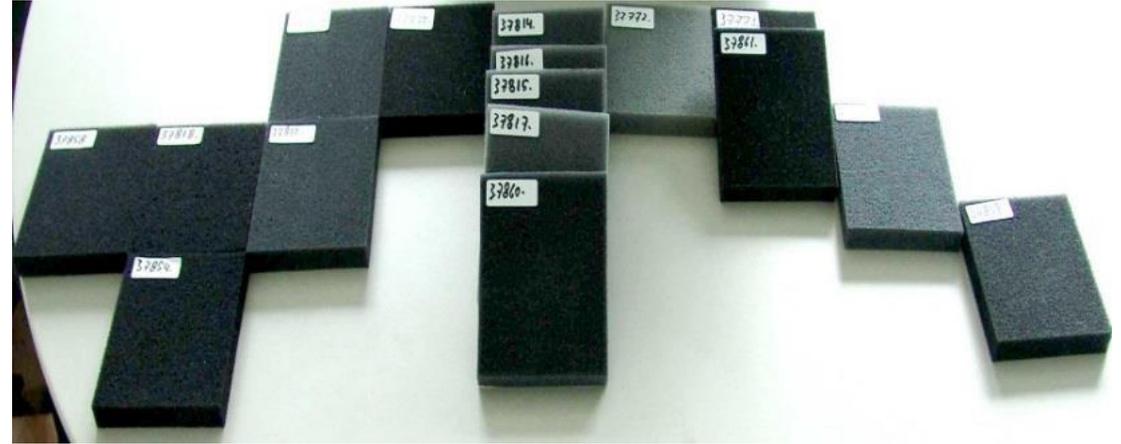
Special Black 4 (acidic)

Example 2

TEGO® STO V 82 %

Pigment Red 57:1 18 %

Irgalite 4 BP



Dosage Recommendations for TEGOMER® Dispersants

	Carbon Black [% AoP]	Organic Pigments [% AoP]	Inorganic Pigments [% AoP]	Fillers [% AoP]
TEGOMER® DA 800	20 - 100	10 - 40	4 - 20	4 - 20
TEGOMER® DA 626	40 - 100	20 - 80	5 - 30	5 - 30
TEGOMER® DA 646	10 - 70	10 - 35	0.5 - 3.0	0.5 - 3.0
TEGO® STO V	20 - 100	20 - 80	10 - 30	10 - 30
TEGO® STO 85 V	20 - 100	20 - 80	10 - 30	10 - 30
TEGOMER® 6875	5 - 15	2 - 5	1 - 2	0.5 - 2

% AoP: Additive calculated on Pigment in parts by weight

Overview: Polymer – Carrier – Liquid Dispersant

Polymers	Carrier	Liquid Dispersant	Food Contact Status
PA, PET, PC	TEGO® STO V / STO 85 V		EU 10/2011; FDA 178.3400
	TEGO® STO V / STO 85 V	TEGOMER® DA 800	EU 10/2011; FDA 175.300
	TEGOMER® DA 800		EU 10/2011; FDA 175.300
	PPG	TEGO® STO V / STO 85 V	Depends on PPG
	PPG	TEGOMER® DA 800	Depends on PPG
PE, PP, EVA	Vegetable oil (e.g. rapseed) Mineral oil for PP sheet application	TEGO® STO V / STO 85 V	EU 10/2011; FDA 178.3400
	TEGO® STO V / STO 85 V		EU 10/2011; FDA 178.3400
	PPG	TEGOMER® DA 626	no
PMMA	MMA	TEGOMER® DA 626	no
PU	PPG (hydrophobic)	TEGOMER® DA 626	no
	PEG (hydrophilic)	TEGOMER® DA 646	no
	Polyesterpolyols	TEGOMER® DA 626	no
	Phthalates (DINP, DOP, DIBP), Adipates, Citrates	TEGOMER® DA 626	no
PS / ABS	TEGO® STO V / STO 85 V		EU 10/2011; FDA 178.3400
	Vegetable Oil	TEGO® STO V / STO 85 V	EU 10/2011; FDA 178.3400
	TEGO® STO V / STO 85 V	TEGOMER® DA 626	no

Polarity of Dispersants, Carrier and Polymers



unpolar	Polymer	Carrier	Dispersant
	Silicone rubber	Silicone OH Silicone VS	TEGOMER® M-Si 2650 TEGOPREN® 6875
	PE, PP, PS	Mineral oil Vegetable oil	TEGO® STO V
	EVA	DINP	TEGOMER® DA626
		PPG	
	SAN, ABS, PVC		TEGOMER® DA646
	PET, PBT		
	PA, PUR	PEG Water	TEGO® STO 85 V TEGOMER® DA800
polar			



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