エイチ・シー・スタルク株式会社　クレビオス製品群

Clevios® P Grades

商品名	用途	導電率	粘度	特記事項
		S/cm	mPas at 100 S^{-1}	
Clevios® P	帯電防止の原料（全ての用途）	~1 (80)	60~100	もっとも基本的なグレードで顧客で自らフォーミュレートしないとコーティング困難。
Clevios® P AG	帯電防止の原料（全ての用途）	~3 (200)	20~100	少々導電率が高いがスタルクとしては、あまりお勧めしない(agfa社製品)。
Clevios® PH	光学用途での帯電防止剤として	~0.3 (65)	15~30	光学特性を上げるため導電率を少し犠牲にしている。
Clevios® P HS	高い固形分でペーストの原料として	~1	>200	固形分が高いという以外、基本的な導電性はClevios Pと同様。
Clevios® P HC V4	高導電タイプの原料（ITOの代替）	~5-10 (400)	100~350	高導電材料の原料（自らフォーミュレートが必要。）
Clevios® P H 500	高導電タイプの原料（ITOの代替）	~1 (400-550)	8~25	高導電材料の原料（自らフォーミュレートが必要。）
Clevios® P H 510	高導電タイプの原料（ITOの代替）	~1 (400-550)	20~100	高導電材料の原料（自らフォーミュレートが必要。）PH500の固形分が高いタイプ
Clevios® P VP AI 4083	有機EL又は有機太陽電池	~10^{-3}	30	比較的低抵抗のタイプ
Clevios® P VP CH 8000	有機EL（パッシブ用）又は有機太陽電池	~10^{-5}	20	クロストークを防ぐため比較的高抵抗
Clevios® P JET	インクジェット用途	~10^{-3}	8	インクジェット用として開発
Clevios® P JET HC	インクジェット用途（比較的導電率が高いタイプ）	~50-90	20 (700 S^{-1})	インクジェット用として開発
Clevios® P JET N	P JETの中性化タイプ	30-90	8 - 18	インクジェット用として開発
Clevios® P JET HC V2	電材用途でインクジェット、高導電タイプ	min. 300 (+5%DMSO)	5 - 15	インクジェット用として開発

Clevios® Formulations

商品名	用途	表面抵抗	粘度	特記事項
			mPas at 100 S^{-1}	
Clevios® F 141 M	耐溶剤タイプ、帯電防止用途	6 µm wet 0,1 Mohm/sq.	20 - 60	レディートゥユーズ、このままコーティングが可能。
Clevios® F PVA	熱成型材料、帯電防止用途	18 µm wet 3 Kohm/sq.		レディートゥユーズ、このままコーティングが可能。
Clevios® F CPP 105DM	導電コーティング	18 µm wet 2 Kohm/sq.	10 - 50	レディートゥユーズ、このままコーティングが可能。
Clevios® F E	ITO代替用途	12 µm wet 340 ohm/sq.	10 - 30	レディートゥユーズ、このままコーティングが可能。
Clevios® S HT	スクリーンペースト、無機EL用途（光学特性がよい）	テストプリント < 1200ohm/sq	3 - 5 dPas	レディートゥユーズ、このままコーティングが可能。（粘度が高い）
Clevios® S V3	スクリーンペースト、無機EL用途	テストプリント< 700ohm/sq	15 - 200 dPas	レディートゥユーズ、このままコーティングが可能。（粘度が高い）

Clevios® Special garde

商品名	用途	導電率	粘度	特記事項
		S/cm	mPas at 100 S^{-1}	
Clevios® P AI 4083 LVW 142	AI 4083の脱イオン品、有機EL並びに太陽電池	~10^{-3}	30	顧客の要求（指定）がない限り販売できない。（特殊品）
Clevios® P AI 4083 LVW 825	AI 4083の脱イオン品、限外ろ過品	~10^{-3}	30	顧客の要求（指定）がない限り販売できない。（特殊品）
Clevios® P CH 8000 LVW 176	PEDOT:PSS が1: 16　脱イオン品、有機EL並びに太陽電池	~10^{-5}	20	顧客の要求（指定）がない限り販売できない。（特殊品）
Clevios® P CH 8000 LVW 185	CH 8000の脱イオン品、限外ろ過品	~10^{-5}	20	顧客の要求（指定）がない限り販売できない。（特殊品）
Clevios® P CH 8000 LVW 419	CH 8000の脱イオン品、限外ろ過品	~10^{-5}	20	顧客の要求（指定）がない限り販売できない。（特殊品）

CLEVIOS™ P

Version 2.0 Revision Date 08.04.2008 Print Date 14.04.2008

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name	:	CLEVIOS™ P
Use of the Substance/Preparation	:	Optical-Industry
Company	:	H. C. Starck GmbH Im Schleeke 78-91 38642 Goslar / Germany
Responsible Department	:	Central Support Services – Product Safety
Telephone	:	+49(0)5321/751-0
E-mail address	:	infoSDS@hcstarck.com
Emergency telephone	:	+49(0)5321/751-0

2. HAZARDS IDENTIFICATION

Classification

No classification

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

Aqueous solution

Hazardous components

Chemical Name	CAS-No.	EC-No.	Symbol(s)	R-phrase(s)	Concentration [%]
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	155090-83-8	424-490-4	Xi	R41	1.3

For the full text of the R-phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

If inhaled	:	Remove to fresh air. If symptoms persist, call a physician.
In case of skin contact	:	Wash off with soap and water. In the case of skin irritation or allergic reactions see a physician.
In case of eye contact	:	Rinse with plenty of water. If eye irritation persists, consult a specialist.
If swallowed	:	Clean mouth with water and drink afterwards plenty of water. Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Not combustible. Extinguishing methods depends upon fire in vicinity poses.
Extinguishing media which shall not be used for safety reasons	:	None known.
Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases	:	None known.
Special protective equipment for fire-fighters	:	No special protective equipment required.
Additional advice	:	None known.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Ventilate the area. Use personal protective equipment.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system.
Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Fill into labelled, sealable containers.

7. HANDLING AND STORAGE

Handling

Advice on protection against fire and explosion	:	No special precautions required.

Storage

Requirements for storage areas and containers	:	Comply with the directives governing water law
Further information on storage conditions	:	Store in original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limit Values

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate); CAS-No.: 155090-83-8

Basis	:	EH40 (UK)

Note	:	No limit value established.

Personal protective equipment

Hand protection	:	Glove material: Butyl-rubber, Viton After contamination with product change the gloves immediately and remove them according to relevant national and local regulations.
Eye protection	:	Safety glasses
Body Protection	:	Do not get on skin or clothing.
General protective measures	:	Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	liquid
Colour	:	dark blue
Odour	:	very faint

Safety data

pH	:	ca. 1 - 2 at 20 °C

Change in physical state

- Pour point	:	ca. 0 °C
-	:	ca. 100 °C
Vapour pressure	:	23.00 hPa at 20 °C
Density	:	1.0032 g/cm3 at 20 °C

Solubility

- Water solubility	:	completely miscible

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	None known.
Thermal decomposition	:	No decomposition up to 100 °C
Hazardous decomposition products	:	No decomposition if stored normally. Formation of carbon dioxide (CO2) and carbon monoxide (CO) during thermal decomposition.

11. TOXICOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Acute oral toxicity

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	LD50 rat > 2,500 mg/kg Method: Directive 67/548/EEC Annex V, B.1.tris.

Skin irritation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	rabbit No skin irritation Method: Directive 67/548/EEC, Annex V, B.4.

Eye irritation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	rabbit Risk of serious damage to eyes. Method: Directive 67/548/EEC, Annex V, B.5.

Sensitisation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Maximisation Test guinea pig Did not cause sensitization on laboratory animals. Method: Directive 67/548/EEC, Annex V, B.6.

Repeated dose toxicity

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	rat Oral Exposure time: 28-day NOEL: 272 mg/kg Method: Directive 67/548/EEC, Annex V, B.7.

Genotoxicity in vitro

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Ames test Salmonella typhimurium No indication of mutagenic effects. Method: Directive 67/548/EEC, Annex V, B.14. Chromosome aberration test in vitro Chinese Hamster V79 cells No indication of mutagenic effects. Method: No information available.

12. ECOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Toxicity to fish

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Brachydanio rerio (zebra fish) 96 h NOEC >= 100 mg/l Method: Directive 67/548/EEC, Annex V, C.1.

Toxicity to daphnia and other aquatic invertebrates.

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Daphnia magna (Water flea) 48 h NOEC >= 100 mg/l Method: Directive 67/548/EEC, Annex V, C.2.

Toxicity to algae

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Desmodesmus subspicatus 72 h ErC50 54 mg/l Method: Directive 67/548/EEC, Annex V, C.3.

Biodegradability

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Not readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Product : The Federal, regional and local rules and regulations governing disposal must be complied with.
This product is cannot be classified with disposal identification key acc. to the EU disposal directives as a classification results from the intended utilisation purpose of the consumer

Packaging : Packaging that is not contaminated and has been cleaned can be recycled.

14. TRANSPORT INFORMATION

Land transport ADR/RID
Not dangerous goods

Air transport ICAO-TI/IATA-DGR
Not dangerous goods

Sea transport IMDG
Not dangerous goods

15. REGULATORY INFORMATION

Labelling according to EC Directives

Directive 1999/45/EC

No labelling required

National legislation

Major Accident Hazard Legislation : 96/82/EC
Annex I
Number: Is not subject to the Seveso II Directive.

16. OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3

R41 Risk of serious damage to eyes.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The above details do not imply any guarantee concerning composition, properties or performance.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

CLEVIOS™ P AG

Version 2.0 Revision Date 08.04.2008 Print Date 14.04.2008

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name	:	CLEVIOS™ P AG
Use of the Substance/Preparation	:	Electrical Industry and Electronics
Company	:	H. C. Starck GmbH Im Schleeke 78-91 38642 Goslar / Germany
Responsible Department	:	Central Support Services – Product Safety
Telephone	:	+49(0)5321/751-0
E-mail address	:	infoSDS@hcstarck.com
Emergency telephone	:	+49(0)5321/751-0

2. HAZARDS IDENTIFICATION

Classification

No classification

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

Aqueous solution

Hazardous components

Chemical Name	CAS-No.	EC-No.	Symbol(s)	R-phrase(s)	Concentration [%]
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	155090-83-8	424-490-4	Xi	R41	1.2

For the full text of the R-phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

If inhaled	:	Remove to fresh air. If symptoms persist, call a physician.
In case of skin contact	:	Wash off with soap and water. In the case of skin irritation or allergic reactions see a physician.
In case of eye contact	:	Rinse with plenty of water. If eye irritation persists, consult a specialist.
If swallowed	:	Clean mouth with water and drink afterwards plenty of water. Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Not combustible. Extinguishing methods depends upon fire in vicinity poses.
Extinguishing media which shall not be used for safety reasons	:	None known.
Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases	:	None known.
Special protective equipment for fire-fighters	:	No special protective equipment required.
Additional advice	:	None known.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Ventilate the area. Use personal protective equipment.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system.
Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Fill into labelled, sealable containers.

7. HANDLING AND STORAGE

Handling

Advice on protection against fire and explosion	:	No special precautions required.

Storage

Requirements for storage areas and containers	:	Comply with the directives governing water law
Further information on storage conditions	:	Store in original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limit Values

Personal protective equipment

Hand protection	:	Glove material: Butyl-rubber, Viton After contamination with product change the gloves immediately and remove them according to relevant national and local regulations.
Eye protection	:	Safety glasses
Body Protection	:	Do not get on skin or clothing.
General protective measures	:	Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	liquid
Colour	:	dark blue
Odour	:	very faint

Safety data

pH	:	ca. 1 - 2 at 20 °C

Change in physical state

- Pour point	:	ca. 0 °C
-	:	ca. 100 °C
Vapour pressure	:	23.00 hPa at 20 °C
Density	:	ca. 1.0028 g/cm3 at 20 °C

Solubility

- Water solubility	:	completely miscible

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	None known.
Thermal decomposition	:	No decomposition up to 100 °C
Hazardous decomposition products	:	No decomposition if stored normally. Formation of carbon dioxide (CO2) and carbon monoxide (CO) during thermal decomposition.

11. TOXICOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Acute oral toxicity

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : LD50 rat > 2,500 mg/kg
Method: Directive 67/548/EEC Annex V, B.1.tris.

Skin irritation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rabbit
No skin irritation
Method: Directive 67/548/EEC, Annex V, B.4.

Eye irritation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rabbit
Risk of serious damage to eyes.
Method: Directive 67/548/EEC, Annex V, B.5.

Sensitisation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Maximisation Test guinea pig
Did not cause sensitization on laboratory animals.
Method: Directive 67/548/EEC, Annex V, B.6.

Repeated dose toxicity

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rat Oral
Exposure time: 28-day
NOEL: 272 mg/kg
Method: Directive 67/548/EEC, Annex V, B.7.

Genotoxicity in vitro

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Ames test
Salmonella typhimurium
No indication of mutagenic effects.
Method: Directive 67/548/EEC, Annex V, B.14.

Chromosome aberration test in vitro
Chinese Hamster V79 cells
No indication of mutagenic effects.
Method: No information available.

12. ECOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Toxicity to fish

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Brachydanio rerio (zebra fish)
96 h NOEC >= 100 mg/l
Method: Directive 67/548/EEC, Annex V, C.1.

Toxicity to daphnia and other aquatic invertebrates.

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Daphnia magna (Water flea)
48 h NOEC >= 100 mg/l
Method: Directive 67/548/EEC, Annex V, C.2.

Toxicity to algae

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Desmodesmus subspicatus
72 h ErC50 54 mg/l
Method: Directive 67/548/EEC, Annex V, C.3.

Biodegradability

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Not readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Product : The Federal, regional and local rules and regulations governing disposal must be complied with.
This product is cannot be classified with disposal identification key acc. to the EU disposal directives as a classification results from the intended utilisation purpose of the consumer

Packaging : Packaging that is not contaminated and has been cleaned can be recycled.

14. TRANSPORT INFORMATION

Land transport ADR/RID
Not dangerous goods

Air transport ICAO-TI/IATA-DGR
Not dangerous goods

Sea transport IMDG
Not dangerous goods

15. REGULATORY INFORMATION

Labelling according to EC Directives

Directive 1999/45/EC

No labelling required

National legislation

Major Accident Hazard Legislation : 96/82/EC
Annex I
Number: Is not subject to the Seveso II Directive.

16. OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3

R41 Risk of serious damage to eyes.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The above details do not imply any guarantee concerning composition, properties or performance.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name : CLEVIOS™ PH

Use of the Substance/Preparation : Optical-Industry

Company : H.C. Starck GmbH
Im Schleeke 78 - 91
38642 Goslar
Germany

Telephone : +49(0)5321/751-0
Responsible Department : Corporate HSEQ & SIS - Product Safety
E-mail address : infoSDS@hcstarck.com
Emergency telephone : +49(0)5321/751-0

2. HAZARDS IDENTIFICATION

Classification

No classification

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

Aqueous polymer dispersion

Hazardous components

Chemical Name	CAS-No.	EC-No.	Symbol(s)	R-phrase(s)	Concentration [%]
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	155090-83-8	424-490-4	Xi	R41	1.3

For the full text of the R-phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

If inhaled : Remove to fresh air.
If symptoms persist, call a physician.

In case of skin contact : Wash off with soap and water.
In the case of skin irritation or allergic reactions see a physician.

In case of eye contact : Rinse with plenty of water.
If eye irritation persists, consult a specialist.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Not combustible. Extinguishing methods depends upon fire in vicinity poses.
Extinguishing media which shall not be used for safety reasons	:	None known.
Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases	:	None known.
Special protective equipment for fire-fighters	:	No special protective equipment required.
Additional advice	:	None known.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Ventilate the area. Use personal protective equipment.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system.
Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Fill into labelled, sealable containers.

7. HANDLING AND STORAGE

Handling

Advice on protection against fire and explosion	:	No special precautions required.

Storage

Requirements for storage areas and containers	:	Comply with the directives governing water law
Further information on storage conditions	:	Store in original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment

Hand protection	:	Glove material: Butyl-rubber, Viton After contamination with product change the gloves immediately and remove them according to relevant national and local regulations.
Eye protection	:	Safety glasses
Body Protection	:	Do not get on skin or clothing.
General protective measures	:	Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	liquid
Colour	:	dark blue
Odour	:	very faint

Safety data

pH	:	ca. 1 - 2 at 20 °C

Change in physical state

- Pour point	:	ca. 0 °C
-	:	ca. 100 °C
Vapour pressure	:	23.00 hPa at 20 °C
Density	:	1.0032 g/cm3 at 20 °C

Solubility

- Water solubility	:	completely miscible

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	None known.
Thermal decomposition	:	No decomposition up to 100 °C
Hazardous decomposition products	:	No decomposition if stored normally. Formation of carbon dioxide (CO2) and carbon monoxide (CO) during thermal decomposition.

11. TOXICOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Acute oral toxicity
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : LD50 rat > 2,500 mg/kg
Method: Directive 67/548/EEC Annex V, B.1.tris.

Skin irritation
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rabbit
No skin irritation
Method; Directive 67/548/EEC, Annex V, B.4.

Eye irritation
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rabbit
Risk of serious damage to eyes.
Method: Directive 67/548/EEC, Annex V, B.5.

Sensitisation
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Maximisation Test guinea pig
Did not cause sensitization on laboratory animals.
Method: Directive 67/548/EEC, Annex V, B.6.

Genotoxicity in vitro
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Ames test
Salmonella typhimurium
No indication of mutagenic effects.
Method: Directive 67/548/EEC, Annex V, B.14.

Chromosome aberration test in vitro
Chinese Hamster V79 cells
No indication of mutagenic effects.
Method: No information available.

12. ECOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Toxicity to fish
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Brachydanio rerio (zebra fish)
96 h NOEC >= 100 mg/l
Method: Directive 67/548/EEC, Annex V, C.1.

Toxicity to daphnia and other aquatic invertebrates.
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Daphnia magna (Water flea)
48 h NOEC >= 100 mg/l
Method: Directive 67/548/EEC, Annex V, C.2.

Toxicity to algae
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Desmodesmus subspicatus
72 h ErC50 54 mg/l
Method: Directive 67/548/EEC, Annex V, C.3.

Biodegradability
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Not readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Product : The Federal, regional and local rules and regulations governing disposal must be complied with.

Packaging : Packaging that is not contaminated and has been cleaned can be recycled.

14. TRANSPORT INFORMATION

Land transport ADR/RID
Not dangerous goods

Air transport ICAO-TI/IATA-DGR
Not dangerous goods

Sea transport IMDG
Not dangerous goods

15. REGULATORY INFORMATION

Labelling according to EC Directives

Directive 1999/45/EC

No labelling required

16. OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3

R41 Risk of serious damage to eyes.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The above details do not imply any guarantee concerning composition, properties or performance.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

CLEVIOS™ P HC V4

Version 2.0 | Revision Date 08.04.2008 | Print Date 07.05.2008

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name	:	CLEVIOS™ P HC V4
Use of the Substance/Preparation	:	Electrical Industry and Electronics
Company	:	H. C. Starck GmbH Im Schleeke 78-91 38642 Goslar / Germany
Responsible Department	:	Central Support Services – Product Safety
Telephone	:	+49(0)5321/751-0
E-mail address	:	infoSDS@hcstarck.com
Emergency telephone	:	+49(0)5321/751-0

2. HAZARDS IDENTIFICATION

Classification

No classification

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

Aqueous solution

Hazardous components

Chemical Name	CAS-No.	EC-No.	Symbol(s)	R-phrase(s)	Concentration [%]
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	155090-83-8	424-490-4	Xi	R41	1.3

For the full text of the R-phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

If inhaled	:	Remove to fresh air. If symptoms persist, call a physician.
In case of skin contact	:	Wash off with soap and water. In the case of skin irritation or allergic reactions see a physician.
In case of eye contact	:	Rinse with plenty of water. If eye irritation persists, consult a specialist.
If swallowed	:	Clean mouth with water and drink afterwards plenty of water. Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Not combustible. Extinguishing methods depends upon fire in vicinity poses.
Extinguishing media which shall not be used for safety reasons	:	None known.
Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases	:	None known.
Special protective equipment for fire-fighters	:	No special protective equipment required.
Additional advice	:	None known.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Ventilate the area. Use personal protective equipment.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system.
Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Fill into labelled, sealable containers.

7. HANDLING AND STORAGE

Handling

Advice on protection against fire and explosion	:	No special precautions required.

Storage

Requirements for storage areas and containers	:	Comply with the directives governing water law
Further information on storage conditions	:	Store in original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limit Values

Personal protective equipment

Hand protection	:	Glove material: Butyl-rubber, Viton After contamination with product change the gloves immediately and remove them according to relevant national and local regulations.
Eye protection	:	Safety glasses
Body Protection	:	Do not get on skin or clothing.
General protective measures	:	Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	liquid
Colour	:	dark blue
Odour	:	very faint

Safety data

pH	:	ca. 1 - 2 at 20 °C

Change in physical state

- Pour point	:	ca. 0 °C
-	:	ca. 100 °C
Vapour pressure	:	23.00 hPa at 20 °C
Density	:	ca. 1.0032 g/cm3 at 20 °C

Solubility

- Water solubility	:	completely miscible

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	None known.
Thermal decomposition	:	No decomposition up to 100 °C
Hazardous decomposition products	:	No decomposition if stored normally. Formation of carbon dioxide (CO2) and carbon monoxide (CO) during thermal decomposition.

11. TOXICOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Acute oral toxicity

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : LD50 rat > 2,500 mg/kg
Method: Directive 67/548/EEC Annex V, B.1.tris.

Skin irritation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rabbit
No skin irritation
Method: Directive 67/548/EEC, Annex V, B.4.

Eye irritation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rabbit
Risk of serious damage to eyes.
Method: Directive 67/548/EEC, Annex V, B.5.

Sensitisation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Maximisation Test guinea pig
Did not cause sensitization on laboratory animals.
Method: Directive 67/548/EEC, Annex V, B.6.

Repeated dose toxicity

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rat Oral
Exposure time: 28-day
NOEL: 272 mg/kg
Method: Directive 67/548/EEC, Annex V, B.7.

Genotoxicity in vitro

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Ames test
Salmonella typhimurium
No indication of mutagenic effects.
Method: Directive 67/548/EEC, Annex V, B.14.

Chromosome aberration test in vitro
Chinese Hamster V79 cells
No indication of mutagenic effects.
Method: No information available.

12. ECOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Toxicity to fish

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Brachydanio rerio (zebra fish)
96 h NOEC >= 100 mg/l
Method: Directive 67/548/EEC, Annex V, C.1.

Toxicity to daphnia and other aquatic invertebrates.

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Daphnia magna (Water flea)
48 h NOEC >= 100 mg/l
Method: Directive 67/548/EEC, Annex V, C.2.

Toxicity to algae

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Desmodesmus subspicatus
72 h ErC50 54 mg/l
Method: Directive 67/548/EEC, Annex V, C.3.

Biodegradability

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Not readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Product : The Federal, regional and local rules and regulations governing disposal must be complied with.
This product is cannot be classified with disposal identification key acc. to the EU disposal directives as a classification results from the intended utilisation purpose of the consumer

Packaging : Packaging that is not contaminated and has been cleaned can be recycled.

14. TRANSPORT INFORMATION

Land transport ADR/RID
Not dangerous goods

Air transport ICAO-TI/IATA-DGR
Not dangerous goods

Sea transport IMDG
Not dangerous goods

15. REGULATORY INFORMATION

Labelling according to EC Directives

Directive 1999/45/EC

No labelling required

National legislation

Major Accident Hazard Legislation : 96/82/EC
Annex I
Number: Is not subject to the Seveso II Directive.

16. OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3

R41 Risk of serious damage to eyes.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The above details do not imply any guarantee concerning composition, properties or performance.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

CLEVIOS™ PH 500

Version 2.0 | Revision Date 08.04.2008 | Print Date 07.05.2008

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name	:	CLEVIOS™ PH 500
Use of the Substance/Preparation	:	Optical-Industry
Company	:	H. C. Starck GmbH Im Schleeke 78-91 38642 Goslar / Germany
Responsible Department	:	Central Support Services – Product Safety
Telephone	:	+49(0)5321/751-0
E-mail address	:	infoSDS@hcstarck.com
Emergency telephone	:	+49(0)5321/751-0

2. HAZARDS IDENTIFICATION

Classification

No classification

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

Aqueous solution

Hazardous components

Chemical Name	CAS-No.	EC-No.	Symbol(s)	R-phrase(s)	Concentration [%]
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	155090-83-8	424-490-4	Xi	R41	1.3

For the full text of the R-phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

If inhaled	:	Remove to fresh air. If symptoms persist, call a physician.
In case of skin contact	:	Wash off with soap and water. In the case of skin irritation or allergic reactions see a physician.
In case of eye contact	:	Rinse with plenty of water. If eye irritation persists, consult a specialist.
If swallowed	:	Clean mouth with water and drink afterwards plenty of water. Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Not combustible. Extinguishing methods depends upon fire in vicinity poses.
Extinguishing media which shall not be used for safety reasons	:	None known.
Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases	:	None known.
Special protective equipment for fire-fighters	:	No special protective equipment required.
Additional advice	:	None known.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Ventilate the area. Use personal protective equipment.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system.
Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Fill into labelled, sealable containers.

7. HANDLING AND STORAGE

Handling

Advice on protection against fire and explosion	:	No special precautions required.

Storage

Requirements for storage areas and containers	:	Comply with the directives governing water law
Further information on storage conditions	:	Store in original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limit Values

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate); CAS-No.: 155090-83-8

Basis	:	EH40 (UK)

Note	:	No limit value established.

Personal protective equipment

Hand protection	:	Glove material: Butyl-rubber, Viton After contamination with product change the gloves immediately and remove them according to relevant national and local regulations.
Eye protection	:	Safety glasses
Body Protection	:	Do not get on skin or clothing.
General protective measures	:	Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	liquid
Colour	:	dark blue
Odour	:	odourless

Safety data

pH	:	ca. 1 - 2 at 20 °C

Change in physical state

-	:	ca. 100 °C
Density	:	1.0032 g/cm3 at 20 °C

Solubility

- Water solubility	:	completely miscible

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	None known.
Thermal decomposition	:	No decomposition up to 100 °C
Hazardous decomposition products	:	No decomposition if stored normally. Formation of carbon dioxide (CO2) and carbon monoxide (CO) during thermal decomposition.

11. TOXICOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Acute oral toxicity

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : LD50 rat > 2,500 mg/kg
Method: Directive 67/548/EEC Annex V, B.1.tris.

Skin irritation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rabbit
No skin irritation
Method: Directive 67/548/EEC, Annex V, B.4.

Eye irritation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rabbit
Risk of serious damage to eyes.
Method: Directive 67/548/EEC, Annex V, B.5.

Sensitisation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Maximisation Test guinea pig
Did not cause sensitization on laboratory animals.
Method: Directive 67/548/EEC, Annex V, B.6.

Repeated dose toxicity

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rat Oral
Exposure time: 28-day
NOEL: 272 mg/kg
Method: Directive 67/548/EEC, Annex V, B.7.

Genotoxicity in vitro

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Ames test
Salmonella typhimurium
No indication of mutagenic effects.
Method: Directive 67/548/EEC, Annex V, B.14.

Chromosome aberration test in vitro
Chinese Hamster V79 cells
No indication of mutagenic effects.
Method: No information available.

12. ECOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Toxicity to fish

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Brachydanio rerio (zebra fish)
96 h NOEC >= 100 mg/l
Method: Directive 67/548/EEC, Annex V, C.1.

Toxicity to daphnia and other aquatic invertebrates.

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Daphnia magna (Water flea)
48 h NOEC >= 100 mg/l
Method: Directive 67/548/EEC, Annex V, C.2.

Toxicity to algae

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Desmodesmus subspicatus
72 h ErC50 54 mg/l
Method: Directive 67/548/EEC, Annex V, C.3.

Biodegradability

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Not readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Product : The Federal, regional and local rules and regulations governing disposal must be complied with.
This product is cannot be classified with disposal identification key acc. to the EU disposal directives as a classification results from the intended utilisation purpose of the consumer

Packaging : Packaging that is not contaminated and has been cleaned can be recycled.

14. TRANSPORT INFORMATION

Land transport ADR/RID
Not dangerous goods

Air transport ICAO-TI/IATA-DGR
Not dangerous goods

Sea transport IMDG
Not dangerous goods

15. REGULATORY INFORMATION

Labelling according to EC Directives

Directive 1999/45/EC

No labelling required

National legislation

Major Accident Hazard Legislation : 96/82/EC
Annex I
Number: Is not subject to the Seveso II Directive.

16. OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3

R41 Risk of serious damage to eyes.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The above details do not imply any guarantee concerning composition, properties or performance.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

CLEVIOS™ P AP.AI 4083

Version 2.0 Revision Date 08.04.2008 Print Date 04.06.2008

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name	:	CLEVIOS™ P AP.AI 4083
Use of the Substance/Preparation	:	Optical-Industry
Company	:	H. C. Starck GmbH Im Schleeke 78-91 38642 Goslar / Germany
Responsible Department	:	Central Support Services – Product Safety
Telephone	:	+49(0)5321/751-0
E-mail address	:	infoSDS@hcstarck.com
Emergency telephone	:	+49(0)5321/751-0

2. HAZARDS IDENTIFICATION

Classification

No classification

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

Aqueous solution

Hazardous components

Chemical Name	CAS-No.	EC-No.	Symbol(s)	R-phrase(s)	Concentration [%]
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	155090-83-8	424-490-4	Xi	R41	<= 1.3

For the full text of the R-phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

If inhaled	:	Remove to fresh air. If symptoms persist, call a physician.
In case of skin contact	:	Wash off with soap and water. In the case of skin irritation or allergic reactions see a physician.
In case of eye contact	:	Rinse with plenty of water. If eye irritation persists, consult a specialist.
If swallowed	:	Clean mouth with water and drink afterwards plenty of water. Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Not combustible. Extinguishing methods depends upon fire in vicinity poses.
Extinguishing media which shall not be used for safety reasons	:	None known.
Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases	:	None known.
Special protective equipment for fire-fighters	:	No special protective equipment required.
Additional advice	:	None known.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Ventilate the area. Use personal protective equipment.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system.
Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Fill into labelled, sealable containers.

7. HANDLING AND STORAGE

Handling

Advice on protection against fire and explosion	:	No special precautions required.

Storage

Requirements for storage areas and containers	:	Comply with the directives governing water law
Further information on storage conditions	:	Store in original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limit Values

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate); CAS-No.: 155090-83-8

Basis	:	EH40 (UK)

Note	:	No limit value established.

Personal protective equipment

Hand protection	:	Glove material: Butyl-rubber, Viton After contamination with product change the gloves immediately and remove them according to relevant national and local regulations.
Eye protection	:	Safety glasses
Body Protection	:	Do not get on skin or clothing.
General protective measures	:	Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	liquid
Colour	:	blue
Odour	:	odourless

Safety data

pH	:	1.5 - 2.5

Change in physical state

-	:	ca. 100 °C
Vapour pressure	:	23.00 hPa at 20 °C
Density	:	ca. 1 g/cm3 at 20 °C

Solubility

- Water solubility	:	completely miscible

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	None known.
Thermal decomposition	:	No decomposition up to 100 °C
Hazardous decomposition products	:	No decomposition if stored normally. Formation of carbon dioxide (CO2) and carbon monoxide (CO) during thermal decomposition.

11. TOXICOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Acute oral toxicity

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : LD50 rat > 2,500 mg/kg
Method: Directive 67/548/EEC Annex V, B.1.tris.

Skin irritation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rabbit
No skin irritation
Method: Directive 67/548/EEC, Annex V, B.4.

Eye irritation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rabbit
Risk of serious damage to eyes.
Method: Directive 67/548/EEC, Annex V, B.5.

Sensitisation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Maximisation Test guinea pig
Did not cause sensitization on laboratory animals.
Method: Directive 67/548/EEC, Annex V, B.6.

Repeated dose toxicity

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : rat Oral
Exposure time: 28-day
NOEL: 272 mg/kg
Method: Directive 67/548/EEC, Annex V, B.7.

Genotoxicity in vitro

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Ames test
Salmonella typhimurium
No indication of mutagenic effects.
Method: Directive 67/548/EEC, Annex V, B.14.

Chromosome aberration test in vitro
Chinese Hamster V79 cells
No indication of mutagenic effects.
Method: No information available.

12. ECOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Toxicity to fish

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Brachydanio rerio (zebra fish)
96 h NOEC >= 100 mg/l
Method: Directive 67/548/EEC, Annex V, C.1.

Toxicity to daphnia and other aquatic invertebrates.

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Daphnia magna (Water flea)
48 h NOEC >= 100 mg/l
Method: Directive 67/548/EEC, Annex V, C.2.

Toxicity to algae

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) : Desmodesmus subspicatus
72 h ErC50 54 mg/l
Method: Directive 67/548/EEC, Annex V, C.3.

Biodegradability

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Not readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Product : The Federal, regional and local rules and regulations governing disposal must be complied with.
This product is cannot be classified with disposal identification key acc. to the EU disposal directives as a classification results from the intended utilisation purpose of the consumer

Packaging : Packaging that is not contaminated and has been cleaned can be recycled.

14. TRANSPORT INFORMATION

Land transport ADR/RID
Not dangerous goods

Air transport ICAO-TI/IATA-DGR
Not dangerous goods

Sea transport IMDG
Not dangerous goods

15. REGULATORY INFORMATION

Labelling according to EC Directives

Directive 1999/45/EC

No labelling required

National legislation

Major Accident Hazard Legislation : 96/82/EC
Annex I
Number: Is not subject to the Seveso II Directive.

16. OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3

R41 Risk of serious damage to eyes.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The above details do not imply any guarantee concerning composition, properties or performance.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name : CLEVIOS™ P VPCH 8000

Use of the Substance/Preparation : Optical-Industry

Company : H.C. Starck GmbH
Im Schleeke 78 - 91
38642 Goslar
Germany

Telephone : +49(0)5321/751-0
Responsible Department : Corporate HSEQ & SIS - Product Safety
E-mail address : infoSDS@hcstarck.com
Emergency telephone : +49(0)5321/751-0

2. HAZARDS IDENTIFICATION

Classification

No classification

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

Aqueous polymer dispersion

Hazardous components

Chemical Name	CAS-No.	EC-No.	Symbol(s)	R-phrase(s)	Concentration [%]
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	155090-83-8	424-490-4	Xi	R41	<= 1.3

For the full text of the R-phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

If inhaled : Remove to fresh air.
If symptoms persist, call a physician.

In case of skin contact : Wash off with soap and water.
In the case of skin irritation or allergic reactions see a physician.

In case of eye contact : Rinse with plenty of water.
If eye irritation persists, consult a specialist.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Not combustible. Extinguishing methods depends upon fire in vicinity poses.
Extinguishing media which shall not be used for safety reasons	:	None known.
Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases	:	None known.
Special protective equipment for fire-fighters	:	No special protective equipment required.
Additional advice	:	None known.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Ventilate the area. Use personal protective equipment.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system.
Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Fill into labelled, sealable containers.

7. HANDLING AND STORAGE

Handling

Advice on protection against fire and explosion	:	No special precautions required.

Storage

Requirements for storage areas and containers	:	Comply with the directives governing water law
Further information on storage conditions	:	Store in original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment

Hand protection	:	Glove material: Butyl-rubber, Viton After contamination with product change the gloves immediately and remove them according to relevant national and local regulations.
Eye protection	:	Safety glasses
Body Protection	:	Do not get on skin or clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	liquid
Color	:	blue
Odor	:	odorless

Safety data

pH	:	1 - 2

Change in physical state

-	:	approx. 100 °C
Vapour pressure	:	< 110.00 hPa at 50 °C
Density	:	approx. 1 g/cm3 at 20 °C

Solubility

- **Water solubility**	:	completely miscible

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	None known.
Thermal decomposition	:	No decomposition up to 100 °C
Hazardous decomposition products	:	No decomposition if stored normally. Formation of carbon dioxide (CO2) and carbon monoxide (CO) during thermal decomposition.

11. TOXICOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Acute oral toxicity

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	LD50 rat > 2,500 mg/kg Method: Directive 67/548/EEC Annex V, B.1.tris.

Skin irritation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	rabbit No skin irritation Method: Directive 67/548/EEC, Annex V, B.4.

Eye irritation

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	rabbit Risk of serious damage to eyes. Method: Directive 67/548/EEC, Annex V, B.5.

Sensitization

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Maximization Test guinea pig Did not cause sensitization on laboratory animals. Method: Directive 67/548/EEC, Annex V, B.6.

Genotoxicity in vitro

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Ames test Salmonella typhimurium No indication of mutagenic effects. Method: Directive 67/548/EEC, Annex V, B.14. Chromosome aberration test in vitro Chinese Hamster V79 cells No indication of mutagenic effects. Method: No information available.

12. ECOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Toxicity to fish

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Brachydanio rerio (zebra fish) 96 h NOEC >= 100 mg/l Method: Directive 67/548/EEC, Annex V, C.1.

Toxicity to daphnia and other aquatic invertebrates.

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Daphnia magna (Water flea) 48 h NOEC >= 100 mg/l Method: Directive 67/548/EEC, Annex V, C.2.

Toxicity to algae

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Desmodesmus subspicatus 72 h ErC50 54 mg/l Method: Directive 67/548/EEC, Annex V, C.3.

Biodegradability

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	:	Not readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Product	:	The Federal, regional and local rules and regulations governing disposal must be complied with.

Packaging	:	Packaging that is not contaminated and has been cleaned can be recycled.

14. TRANSPORT INFORMATION

Land transport ADR/RID
Not dangerous goods

Air transport ICAO-TI/IATA-DGR
Not dangerous goods

Sea transport IMDG
Not dangerous goods

15. REGULATORY INFORMATION

Labelling according to EC Directives

Directive 1999/45/EC

No labelling required

16. OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3

R41	Risk of serious damage to eyes.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The above details do not imply any guarantee concerning composition, properties or performance.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

RD CLEVIOS™ S HT

Version 1.0 Revision Date 30.04.2008 Print Date 04.06.2008

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name : RD CLEVIOS™ S HT

Use of the Substance/Preparation : Electrical Industry and Electronics

Company : H.C. Starck GmbH
Im Schleeke 78 - 91
38642 Goslar
Germany

Telephone : +49(0)5321/751-0
Responsible Department : Corporate HSEQ & SIS - Product Safety
E-mail address : infoSDS@hcstarck.com
Emergency telephone : +49(0)5321/751-0

2. HAZARDS IDENTIFICATION

Classification

No classification

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

Preparation

Hazardous components

Chemical Name	CAS-No.	EC-No.	Symbol(s)	R-phrase(s)	Concentration [%]
2,2'-Oxydiethanol	111-46-6	203-872-2	Xn	R22	<= 15
Propane-1,2-diol	57-55-6	200-338-0			70
1-Octanol	111-87-5	203-917-6	Xi	R36	<= 1

For the full text of the R-phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

If inhaled : Remove to fresh air.

In case of skin contact : Wash off immediately with soap and plenty of water.

In case of eye contact : Rinse with plenty of water.
If eye irritation persists, consult a specialist.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Not combustible. Extinguishing methods depends upon fire in vicinity poses.
Extinguishing media which shall not be used for safety reasons	:	None known.
Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases	:	In case of fire may be formed: Carbon monoxide - Extremely flammable, Toxic Carbon Dioxide - Gas is heavier than air. Act as an asphyxiant at high concentrations.
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus.
Additional advice	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Ventilate the area. Use personal protective equipment.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system.
Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Fill into labelled, sealable containers.

7. HANDLING AND STORAGE

Handling

Advice on protection against fire and explosion	:	No special precautions required.

Storage

Requirements for storage areas and containers	:	Comply with the directives governing water law
Further information on storage conditions	:	Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limit Values

2,2'-Oxydiethanol; CAS-No.: 111-46-6

Basis	:	EH40 (UK)
Threshold limits		
TWA	:	101 mg/m3 23 ppm

Propane-1,2-diol, Total Vapour And Particulates; CAS-No.: 57-55-6

Basis	:	EH40 (UK)
Threshold limits		
TWA	:	474 mg/m3 150 ppm

1-Octanol; CAS-No.: 111-87-5

Basis	:	TRGS 900
Threshold limits		
	:	106 mg/m3 20 ml/m3
Ceiling limit	:	1(I)
Note	:	AGS

2,2'-Oxydiethanol; CAS-No.: 111-46-6

Basis	:	OEL (EU)
Note	:	No limit value established.

Propane-1,2-diol, Total Vapour And Particulates; CAS-No.: 57-55-6

Basis	:	OEL (EU)
Note	:	No limit value established.

Personal protective equipment

Hand protection	:	Glove material: Butyl-rubber, Viton After contamination with product change the gloves immediately and remove them according to relevant national and local regulations.
Eye protection	:	Safety glasses
Body Protection	:	Do not get on skin or clothing.
General protective measures	:	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	paste
Colour	:	blue
Odour	:	very faint

Safety data

pH	:	ca. 1.5 at 20 °C

Change in physical state

- **Boiling point/boilingrange** : ca. 100 °C

Density : 1.058 g/cm3
at 20 °C

Viscosity

- **Viscosity, dynamic** : 2,000 mPa.s
at 20 °C

10. STABILITY AND REACTIVITY

Conditions to avoid : None known.

Materials to avoid : None known.

Thermal decomposition : not applicable

Hazardous decomposition products : No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

No toxicology information is available.

12. ECOLOGICAL INFORMATION

No information on ecology is available.

13. DISPOSAL CONSIDERATIONS

Product : The Federal, regional and local rules and regulations governing disposal must be complied with.
This product is cannot be classified with disposal identification key acc. to the EU disposal directives as a classification results from the intended utilisation purpose of the consumer

Packaging : Packaging that is not contaminated and has been cleaned can be recycled.

14. TRANSPORT INFORMATION

Land transport ADR/RID
Not dangerous goods

Air transport ICAO-TI/IATA-DGR
Not dangerous goods

Sea transport IMDG
Not dangerous goods

15. REGULATORY INFORMATION

Labelling according to EC Directives

Directive 1999/45/EC

No labelling required

16. OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3

R22	Harmful if swallowed.
R36	Irritating to eyes.

Further information

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Changes since the last version are highlighted in the margin. This version replaces all previous versions.

CLEVIOS™ S V3

Version 1.0 Revision Date 29.04.2008 Print Date 04.06.2008

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name : CLEVIOS™ S V3

Use of the Substance/Preparation : Electrical Industry and Electronics

Company : H.C. Starck GmbH
Im Schleeke 78 - 91
38642 Goslar
Germany

Telephone : +49(0)5321/751-0
Responsible Department : Corporate HSEQ & SIS - Product Safety
E-mail address : infoSDS@hcstarck.com
Emergency telephone : +49(0)5321/751-0

2. HAZARDS IDENTIFICATION

Classification

No classification

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

Preparation

Hazardous components

Chemical Name	CAS-No.	EC-No.	Symbol(s)	R-phrase(s)	Concentration [%]
Propane-1,2-diol	57-55-6	200-338-0			65.6
2,2'-Oxydiethanol	111-46-6	203-872-2	Xn	R22	<= 15
Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate)	155090-83-8	424-490-4	Xi	R41	1.1

For the full text of the R-phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

If inhaled : Remove to fresh air.

In case of skin contact : Wash off immediately with soap and plenty of water.

In case of eye contact : Rinse with plenty of water.
If eye irritation persists, consult a specialist.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Not combustible. Extinguishing methods depends upon fire in vicinity poses.
Extinguishing media which shall not be used for safety reasons	:	None known.
Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases	:	In case of fire may be formed: Carbon monoxide - Extremely flammable, Toxic Carbon Dioxide - Gas is heavier than air. Act as an asphyxiant at high concentrations. sulfuric oxides (SOx) - Toxic, Corrosive
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus.
Additional advice	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Ventilate the area. Use personal protective equipment.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system.
Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Fill into labelled, sealable containers.

7. HANDLING AND STORAGE

Handling

Advice on protection against fire and explosion	:	No special precautions required.

Storage

Requirements for storage areas and containers	:	Comply with the directives governing water law
Further information on storage conditions	:	Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limit Values

Propane-1,2-diol, Total Vapour And Particulates; CAS-No.: 57-55-6

Basis : EH40 (UK)
Threshold limits
TWA : 474 mg/m3
150 ppm

2,2'-Oxydiethanol; CAS-No.: 111-46-6

Basis : EH40 (UK)
Threshold limits
TWA : 101 mg/m3
23 ppm

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate); CAS-No.: 155090-83-8

Basis : EH40 (UK)
Note : No limit value established.

Propane-1,2-diol, Total Vapour And Particulates; CAS-No.: 57-55-6

Basis : OEL (EU)
Note : No limit value established.

2,2'-Oxydiethanol; CAS-No.: 111-46-6

Basis : OEL (EU)
Note : No limit value established.

Poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate); CAS-No.: 155090-83-8

Basis : OEL (EU)
Note : No limit value established.

Personal protective equipment

Respiratory protection : Respiratory protection when aerosols and vapours occur. Respiratory protective device with particle filter EN 143

Hand protection : Glove material: Butyl-rubber, Viton
After contamination with product change the gloves immediately and remove them according to relevant national and local regulations.

Eye protection : Safety glasses

Body Protection : Do not get on skin or clothing.

General protective measures : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form : paste

Colour : blue

Odour : slight

Safety data

pH	:	1.5 at 20 °C

Change in physical state

- Boiling point/boilingrange	:	ca. 105 °C
Density	:	ca. 1.06 g/cm3 at 20 °C

Solubility

- Water solubility	:	completely miscible

Viscosity

- Viscosity, dynamic	:	ca. 2,000 mPa.s at 20 °C

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	None known.
Thermal decomposition	:	no data available
Hazardous decomposition products	:	No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Acute oral toxicity	:	no data available
Skin irritation	:	no data available
Eye irritation	:	no data available
Sensitisation	:	no data available
Genotoxicity in vitro	:	no data available

12. ECOLOGICAL INFORMATION

For risk assessment data of relevant ingredients:

Toxicity to fish	:	no data available
Toxicity to daphnia and other aquatic invertebrates.	:	no data available
Toxicity to algae	:	no data available
Biodegradability	:	no data available

13. DISPOSAL CONSIDERATIONS

Product : The Federal, regional and local rules and regulations governing disposal must be complied with.

: This product is cannot be classified with disposal identification key acc. to the EU disposal directives as a classification results from the intended utilisation purpose of the consumer

Packaging : Packaging that is not contaminated and has been cleaned can be recycled.

14. TRANSPORT INFORMATION

Land transport ADR/RID
Not dangerous goods

Air transport ICAO-TI/IATA-DGR
Not dangerous goods

Sea transport IMDG
Not dangerous goods

15. REGULATORY INFORMATION

Labelling according to EC Directives

Directive 1999/45/EC

No labelling required

National legislation

Major Accident Hazard Legislation : 96/82/EC
Annex I
Number: Is not subject to the Seveso II Directive.

16. OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3

R22	Harmful if swallowed.
R41	Risk of serious damage to eyes.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The above details do not imply any guarantee concerning composition, properties or performance.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.