

POLYMEREXPERT PRESENTS

# EXPERTGEL

Thermoreversible hydrogel

Formulation Guide 2021





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## About

ExpertGel® are patented thermo-sensitive polymers in granular form. Diluted in water, they form hydrogel with film forming properties. Besides this interesting property, hydrogel is liquid at room temperature and becomes gel at body temperature. ExpertGel® are compatible with a wide variety of cosmetic ingredients and perfectly safe.

Our products are China INCI compliant.

## Features and benefits

### **Innovative thickening agent**

Leads to viscosity change upon exposure to body temperature

### **Sprayable product**

Liquid in the packaging, becomes a gel or a cream in contact with skin

### **Cream or lotion with new texture**

New sensation when applied

### **Viscosity controller**

ExpertGel® addition leads to viscosity constant versus temperature

### **Emulsion stabilizer**

ExpertGel® helps to improve emulsion stability

### **Control active releases in water**

Mouth rinse, self tan

### **Film former**

With a silky touch, acts in synergy to improve efficiency of other film former

### **Homogeneous distribution of pigments**

High coverage and reduced pigment level

### **Long lasting**

Effect for fragrances

### **SPF booster**

Optimizes the bioavailability of UV filters

## Properties

ExpertGel® are able to reversibly change their physical state upon a change in temperature.

In hot temperature, thermo-sensitive hydrophobic blocks of the polymer self-associate increasing polymer solution's viscosity. When the temperature increases, polymer solution's viscosity increases in a reversible way.

Unlike most of the rheological modifiers used in cosmetics, ExpertGel® rheological profile is unique.

## Process

### WATER PHASE PROCESS

In O/W emulsions, ExpertGel® can be dissolved in water before making the formulation. Add the solution of ExpertGel® at the end of the process below 45°C with the use of blades until the product is completely incorporated to the emulsion.

Formulation TIPS: The colder the water, the faster the solubilization

### OIL PHASE PROCESS

Add ExpertGel® in the oil phase, heat up to 75°C minimum until the ExpertGel® is melted in the oil phase and make the emulsion. The polymer will migrate to the water phase during the emulsification process.

**INCI**

**ExpertGel® EG312:** POLOXAMER 338 (AND) PPG-51/SMDI COPOLYMER

**ExpertGel® EG412:** POLOXAMER 407 (AND) PPG-12/SMDI COPOLYMER

# *Incredible rich cream*

Phase	Trade Name	INCI Name	Supplier	%
A	DEMINERALIZED WATER	WATER		60.68
A	EDTA	TETRASODIUM EDTA		0.02
A	LUNAMER TP-10	SODIUM POLYACRYLATE	DKSH	0.60
B	GLYCERIN	GLYCERIN		5.00
B	PROPANEDIOL	PROPANEDIOL		3.00
B	SENSIVA SC 50	ETHYLHEXYLGLYCERIN	DKSH / SCHÜLKE & MAYR	0.50
C	CETIOL CC	DICAPRYLYL CARBONATE	BASF	10.00
C	PARFUM BEAUSOLEIL	FRAGRANCE	H. REYNAUD & FILS	0.20
D	DEMINERALIZED WATER	WATER		18.00
<b>D</b>	<b>EXPERTGEL EG312</b>	<b>POLOXAMER 338 (AND) PPG-51/SMDI COPOLYMER</b>	<b>POLYMEREXPERT</b>	<b>2.00</b>

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## *Incredible rich cream*



## Process

1. In a suitable premix container, prepare in advance the PHASE D using cold water and a defloculator
2. Add the ingredients of the PHASE A in the main vessel and disperse Sodium Polyacrylate under stirring
3. When Sodium Polyacrylate is fully developed, add the ingredients of the PHASE B and homogenize for 5 minutes
4. Add the ingredients of the PHASE C and mix for 15 minutes
5. Add the premix of ExpertGel and mix for 15 minutes

### Benefits of the formula

- Rich sensory feel despite a low amount of oil
- Silicon-like touch to the cream

### Functions of ExpertGel EG312

- Texturing agent

# Splash mask

Phase	Trade Name	INCI Name	Supplier	%
A	DEMINERALIZED WATER	WATER		69.00
<b>A</b>	<b>EXPERTGEL EG312</b>	<b>POLOXAMER 338 (AND) PPG-51/SMDI COPOLYMER</b>	<b>POLYMEREXPERT</b>	<b>4.00</b>
B	GLYCERIN	GLYCERIN		20.00
B	MG-60	MALTOOLIGOSYL GLUCOSIDE (AND) HYDROGENATED STARCH HYDROLYSATE	HAYASHIBARA	5.00
B	MINACARE PENTIOL	PENTYLENE GLYCOL	MINASOLVE	2.00

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## Splash mask

## Process

1. Solubilize ExpertGel in cold water under stirring
2. When the blend is completely transparent, add the remaining ingredients of the PHASE B and homogenize under stirring



### Benefits of the formula

- Avoid the formula to drop off the face
- Leave the face fresh and moisturized

### Functions of ExpertGel EG312

- Thermo-gelation in contact with the skin

# Comfort Mask

Phase	Trade Name	INCI Name	Supplier	%
A	DEMINERALIZED WATER	WATER		46.56
A	CARBOPOL ULTREZ 21	ACRYLATES/C10-30 ALKYL ACRYLATE CROSSPOLYMER	LUBRIZOL	0.40
B	GLYCERIN	GLYCERIN		10.00
B	EDTA	DISODIUM EDTA		0.05
B	PROPANEDIOL	PROPANEDIOL		3.00
C	ARLACEL 165	GLYCERYL STEARATE (AND) PEG-100 STEARATE	BASF	4.00
C	DC200/100	DIMETHICONE	DOW CORNING	3.00
C	LABRAFAC CC	CAPRYLIC/CAPRIC TRIGLYCERIDE	GATTEFOSSE	2.00
C	LIPEX SHEA	BUTYROSPERMUM PARKII (SHEA) BUTTER	AAK	2.50
C	LANETTE 16	CETYL ALCOHOL	BASF	0.50
C	SENSIVA SC50	ETHYLHEXYLGLYCERIN	DKSH / SCHÜLKE & MAYR	0.50
C	COPHEROL 1250C	TOCOPHERYL ACETATE	BASF	0.25
D	DEMINERALIZED WATER	WATER		20.00
<b>D</b>	<b>EXPERTGEL EG312</b>	<b>POLOXAMER 338 (AND) PPG-51/SMDI COPOLYMER</b>	<b>POLYMEREXPERT</b>	<b>2.00</b>
F	PARFUM	FRAGRANCE		0.20
G	ALCOHOL DENAT	ALCOHOL		5.00

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## Comfort mask

## Process

1. Swell Carbpol on top of water, then add glycols and EDTA, heat up to 75°C
2. Prepare oily phase by heating together at 75°C Phase C
3. Mix oily phase in water under strong stirring using a rotor stator for 10 min
4. Cool down to room temperature
5. Add the ExpertGel solution and all remaining ingredients

### Benefits of the formula

- Intense moisturizing
- Easy spreading

### Functions of ExpertGel EG312

- Thermo-gelling agent
- Controlled release of actives ingredients



# Peel off mask

Phase	Trade Name	INCI Name	Supplier	%
A	DEMINERALIZED WATER	WATER		30.00
A	MOWIOL 23-88	POLYVINYL ALCOHOL	SEPPIC	10.00
B	DEMINERALIZED WATER	WATER		21.25
<b>B</b>	<b>EXPERTGEL EG312</b>	<b>POLOXAMER 338 (AND) PPG-51/SMDI COPOLYMER</b>	<b>POLYMEREXPERT</b>	<b>3.00</b>
B	ALCOHOL DENAT	ALCOHOL		20.00
C	EDTA	DISODIUM EDTA		0.05
D	GLYCERIN	GLYCERIN	SIGMA ALDRICH	10.00
D	PROPYLENE GLYCOL	PROPYLENE GLYCOL	SIGMA ALDRICH	5.00
E	PARFUM	FRAGRANCE	H. REYNAUD &F ILS	0.20
E	EMULGIN CO 40	PEG-40 HYDROGENATED CASTOR OIL	BASF	0.50

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## *Peel off mask*

## Process

1. Heat 30% of the water phase up to 60°C then swell Mowiol and mix slowly until homogeneous, cool down to RT
2. Prepare ExpertGel solution by adding 21.25% of cold water, 20% of ethanol, and swell ExpertGel
3. Add EDTA to the ExpertGel solution, then add glycols
4. Add the mix fragrance/solubilizer
5. Then add very slowly the Mowiol solution and mix until homogenous

### Benefits of the formula

- The mask is very soft and easy to remove

### Functions of ExpertGel EG312

- Thermo-gelling agent
- Film former



# Coral lip ink

Phase	Trade Name	INCI Name	Supplier	%
A	DEMINERALIZED WATER	WATER		51.00
A	EDTA	DISODIUM EDTA		0.10
A	EUXYL PE 9010	PHENOXYETHANOL (AND) ETHYLHEXYLGLYCERIN	DKSH / SCHÜLKE & MAYR	0.50
A	ALCOHOL	ALCOHOL		8.00
A	TWEEN 20	POLYSORBATE 20		2.00
A	GLYCERIN	GLYCERIN		5.00
B	DEMINERALIZED WATER	WATER		25.00
<b>B</b>	<b>EXPERTGEL EG312</b>	<b>POLOXAMER 338 (AND) PPG-51/SMDI COPOLYMER</b>	<b>POLYMEREXPERT</b>	<b>3.50</b>
C	PARFUM VANILLE GOURMANDE	FRAGRANCE	MANE	0.50
C	RED 4 (sol. 5%)	WATER (AND) CI 14700	SENSIENT	4.40

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## *Coral lip ink*

## Process

1. In a suitable container prepare a premix with the ingredients of the PHASE B
2. Introduce the ingredients of the PHASE A in the main vessel and homogenize
3. Add the PHASE B onto the PHASE A and homogenize
4. Add the fragrance and colorants once the blend is perfectly uniform and homogenize

**TIPS :** Do not hesitate to use cold water to accelerate the solubilization of the ExpertGel

### Benefits of the formula

- No migration into fine lines
- High coverage

### Functions of ExpertGel EG312

- Thermo-gelling agent
- Film former



# Make up fixator

Phase	Trade Name	INCI Name	Supplier	%
A	DEMINERALIZED WATER	WATER		85.90
<b>A</b>	<b>EXPERTGEL EG412</b>	<b>POLOXAMER 407 (AND) PPG-12/SMDI COPOLYMER</b>	<b>POLYMEREXPERT</b>	<b>3.00</b>
B	EUXYL PE 9010	PHENOXYETHANOL (AND) ETHYLHEXYLGLYCERIN	DKSH / SCHÜLKE & MAYR	0.50
B	EDTA	TERTRASODIUM EDTA	SIGMA ALDRICH	0.05
B	ALCOHOL DENAT	ALCOHOL		10.00
C	PARFUM	FRAGRANCE	H. REYNAUD & FILS	0.05
C	TWEEN 20	POLYSORBATE 20	MASSO	0.50

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## *Make up fixator*

## Process

1. Swell ExpertGel EG412 into cold water under agitation
2. Once ExpertGel EG412 is completely dispersed add EDTA, Euxyl PE 9010 and Ethanol to the mix
3. Then add the premix Fragrance & Tween 20

### Benefits of the formula

- Easy to spray
- Fluid at ambient temperature and gelify when applied on the skin

### Functions of ExpertGel EG412

- Thermo-gelling agent
- Film former



# Self resurfacing sunscreen cream

Phase	Trade Name	INCI Name	Supplier	%
A	ESCALOL 517	BUTYL METHOXYDIBENZOYLMETHANE	ASHLAND	3.00
A	PARSOL 340	OCTOCRYLENE	DSM	8.00
A	PARSOL EHS	ETHYLHEXYL SALICYLATE	DSM	5.00
A	PARSOL HMS	HOMOSALATE	DSM	10.00
A	AMPHISOL K	POTASSIUM CETYL PHOSPHATE	DSM	0.75
A	LANETTE O OR	CETEARYL ALCOHOL	BASF	0.30
A	ANTARON V220	VP/EICOSENE COPOLYMER	ASHLAND	1.00
A	CETIOL C5 C	COCO-CAPRYLATE/CAPRATE	BASF	2.50
A	CETIOL CC	DICAPRYLYL CARBONATE	BASF	3.00
A	PELMULEN TR-2	ACRYLATES/C10-30 ALKYL ACRYLATE CROSSPOLYMER	LUBRIZOL	0.10
<b>B</b>	<b>EXPERTGEL EG312</b>	<b>POLOXAMER 338 (AND) PPG-51/SMDI COPOLYMER</b>	<b>POLYMEREXPERT</b>	<b>2.00</b>
C	DEMINERALIZED WATER	WATER		59.75
C	GLYCERIN	GLYCERIN		3.50
C	EDTA	TETRASODIUM EDTA	SIGMA ALDRICH	0.10
D	EUXYL PE 9010	PHENOXYETHANOL (AND) ETHYLHEXYLGLYCERIN	DKSH / SCHÜLKE & MAYR	0.90
E	TRIETHANOLAMINE	TRIETHANOLAMINE	MERCK	0.10

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## *Self resurfacing sunscreen cream*



## Process

1. Melt and mix ingredients of the phase A until 85°C
2. Disperse ingredients of the phase C in heated water, mix until uniform and lump-free
3. Add the ExpertGel EG312 to phase A and mix well
4. Pour A into C under agitation while mixing with high shear mixer (rotor stator / Ultra Turrax)
5. Neutralize with phase D while mixing with high shear
6. Begin to cool down while mixing slowly
7. Add ingredient E, mix until uniform

### Benefits of the formula

- Water resistancy: 55%
- Fluid at ambient temperature and gelifies when applied on the skin

### Functions of ExpertGel EG312

- Thermo-gelling agent
- Film former

# Solar mist

Phase	Trade Name	INCI Name	Supplier	%
<b>A</b>	<b>EXPERTGEL EG312</b>	<b>POLOXAMER 338 (AND) PPG-51/SMDI COPOLYMER</b>	<b>POLYMEREXPERT</b>	<b>1.20</b>
A	DEMINERALIZED WATER	WATER		12.00
B	MONTANOV 68 EC	CETEARYL GLUCOSIDE (AND) CETEARYL ALCOHOL	SEPPIC	1.00
B	NEO HELIOPAN 303	OCTOCRYLENE	SYMRISE	4.00
B	NEO HELIOPAN TYPE BB	BENZOPHENONE-3	SYMRISE	3.00
B	PARSOL 1789	BUTYL METHOXYDIBENZOYLMETHANE	DSM	3.00
B	EUSOLEX HMS	HOMOSALATE	MERCK	4.00
B	EUSOLEX OS	ETHYLHEXYL SALICYLATE	MERCK	5.00
B	DUB DIS	DIISOPROPYL SEBACATE	STEARINERIE DUBOIS	8.00
B	SILSOFT034	CAPRYLYL METHICONE	MOMENTIVE	1.00
C	INUTEC SL1	INULIN LAURYL CARBAMATE	NATUROCHIM	3.20
C	GLYCERIN	GLYCERIN		0.60
C	DEMINERALIZED WATER	WATER		47.00
C	EDTA	TETRASODIUM EDTA	SIGMA ALDRICH	0.05
D	MIRASIL CM 5	CYCLOPENTASILOXANE	UNIPEX/BLUE STAR	3.00
E	PHENOXYETHANOL	PHENOXYETHANOL		0.60
F	SENSIVA SC50	ETHYLHEXYLGLYCERIN	DKSH / SCHÜLKE & MAYR	0.20
F	AVICEL PC 591	MICROCRYSTALLINE CELLULOSE	SOLIANCE	1.00
G	ALLIANZ OPT-C5G	ACRYLATES/C12-22 ALKYL METHACRYLATE COPOLYMER	ISP	2.00
H	FRAGRANCE	FRAGRANCE		0.15

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## Solar mist



### Benefits of the formula

- Water resistancy

### Functions of ExpertGel EG312

- SPF Booster
- Film former

## Process

1. In a suitable premix container, prepare in advance an aqueous solution containing 1.2% EG312, 12% purified water (a 9% EG312 solution) using a defloculator and a cold water bath
2. Introduce the phase B in a melting container using a mixer with an anchor (300rpm) and heat up to 75°C
3. Add the phase C into the main container using a rotor/stator at 2500rpm, mix during 5 minutes and heat up to 75°C
4. When phase B+C reached the same temperature at 75°C, introduce slowly phase B to phase C using a rotor/stator at 3000rpm
5. After 2 minutes, introduce phase D and homogenize during 10 minutes.
6. Cool down to 50°C, reduce the rotor/stator speed to 1500rpm and introduce phase E
7. Once 50°C, use a defloculator (600 rpm) and introduce phase F and mix for 15 minutes
8. Add phase A and G using a defloculator at 1000rpm within 15 minutes
9. Use the rotor/stator at 1600rpm for 5 minutes and at 2000 rpm for 5 additional minutes
10. Cool down to 30°C and use again the defloculator at 500rpm during 15 minutes
11. Add the phase H
12. Adjust the pH to 5.5 with Sodium hydroxyde at 10% if necessary

# New wave spf 30

Phase	Trade Name	INCI Name	Supplier	%
A	DEMINERALIZED WATER	WATER		46.95
A	EUXYL PE 9010	PHENOXYETHANOL (AND) ETHYLHEXYLGLYCERIN	DKSH / SCHÜLKE & MAYR	1.00
B	GLYCERIN	GLYCERIN		3.00
B	KELTROL CG-SA	XANTHAN GUM	AZELIS / CP KELCO	0.25
B	DEMINERALIZED WATER	WATER		10.00
C	PARSOL HS	PHENYLBENZIMIDAZOLE SULFONIC ACID	DSM	3.00
C	NaOH (sol. 10%)	WATER (AND) SODIUM HYDROXIDE		4.50
D	AMPHISOL K	POTASSIUM CETYL PHOSPHATE	DSM	0.60
E	PARSOL EHS	ETHYLHEXYL SALICYLATE	DSM	5.00
E	PARSOL 340	OCTOCRYLENE	DSM	5.00
E	PARSOL 1789	BUTYL METHOXYDIBENZOYLMETHANE	DSM	3.00
E	CETIOL CC	DICAPRYLYL CARBONATE	BASF	10.00
E	TEGO CARE PBS 6	POLYGLYCERYL-6 STEARATE (AND) POLYGLYCERYL-6 BEHENATE	EVONIK	3.00
<b>F</b>	<b>ESTOGEL GREEN</b>	<b>HYDROGENATED CASTOR OIL/SEBACIC ACID COPOLYMER</b>	<b>POLYMEREXPERT</b>	<b>2.00</b>
<b>F</b>	<b>EXPERTGEL EG312</b>	<b>POLOXAMER 338 (AND) PPG-51/SMDI COPOLYMER</b>	<b>POLYMEREXPERT</b>	<b>2.00</b>
G	PARFUM MONOI	FRAGRANCE	H. REYNAUD & FILS	0.50
G	COPHEROL 1250 C	TOCOPHERYL ACETATE	BASF	0.20

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## *New wave spf 30*



## Process

1. Add the ingredients of the PHASE A in the main vessel
2. Prepare a premix PHASE B, introduce it in the main vessel under stirring and then homogenize
3. Prepare a premix PHASE C solubilizing PBSA in a solution of NaOH, when the blend is transparent and homogeneous, introduce it in the main vessel
4. Heat the aqueous phase to 80–85°C under stirring
5. Introduce Amphisol K in the aqueous phase under slow stirring
6. In a secondary vessel introduce the ingredients of the PHASE E and heat to 80–85°C under stirring
7. Add to the PHASE E ExperGel and stir until the blend is uniform
8. Make the emulsion pouring the oily phase onto the water phase and stir vigorously for 15 minutes
9. Cool to 40°C under stirring, add PHASE G and homogenize
10. Cool to 30°C and pour into a suitable packaging

### Benefits of the formula

- Water resistency

### Functions of ExpertGel EG312

- SPF Booster
- Film former

# Hair jelly

Phase	Trade Name	INCI Name	Supplier	%
A	DEMINERALIZED WATER	WATER		10.00
A	POLYMER AQ 38S	DIGLYCOL/CHDM/ISOPHTALATES/COPOLYMER	EASTMAN / UNIPEX	3.00
B	DEMINERALIZED WATER	WATER		51.00
<b>B</b>	<b>EXPERTGEL EG412</b>	<b>POLOXAMER 407 (AND) PPG-12/SMDI COPOLYMER</b>	<b>POLYMEREXPERT</b>	<b>6.00</b>
C	DIGLYCERIN S	DIGLYCERIN		5.00
C	GLYCERIN	GLYCERIN		24.00
C	PANTHENOL 100%	PANTHENOL	SYMRISE	0.50
C	SYMDIOL 68T	1,2-HEXANEDIOL (AND) CAPRYLYL GLYCOL (AND) TROPOLONE		0.40
C	FRAGRANCE	FRAGRANCE		0.10

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## *Hair jelly*



## Process

1. In a suitable premix container, prepare in advance the PHASE A at 80°C
2. In the main blender, mix at 15 – 20°C the PHASE B
3. Once the gel is clear, introduce in the main blender the PHASE A and homogenize
4. Then introduce in the main blender the ingredients of the PHASE C

### TIPS:

In order to get a more viscous formula, add Polysorbate 20  
In order to get a more fluid formula, add Ethanol  
For a stickier formula, on hands as on hair, modify the diglycerin/  
glycerin ratio (diglycerin raise the sticky effect)  
For a less sticky formula, substitute Glycerin by Propylene glycol

### Benefits of the formula

- Memory shape formula

### Functions of ExpertGel EG412

- Texturizing agent

# Clear perfumed gel

Phase	Trade Name	INCI Name	Supplier	%
A	DEMINERALIZED WATER	WATER		31.05
<b>A</b>	<b>EXPERTGEL EG312</b>	<b>POLOXAMER 338 (AND) PPG-51/SMDI COPOLYMER</b>	<b>POLYMEREXPERT</b>	<b>3.45</b>
B	DEMINERALIZED WATER	WATER		52.55
B	EDTA	TETRASODIUM EDTA		0.05
C	FRAGRANCE	FRAGRANCE		4.00
C	SOLUBILIZER 660352	PEG-40 HYDROGENATED CASTOR OIL (AND) TRIDECETH-9 (AND) PROPYLENE GLYCOL (AND) WATER	SYMRISE	8.20
C	SYMDIOL 68	1,2-HEXANEDIOL (AND) CAPRYLYL GLYCOL	SYMRISE	0.70

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## Clear perfumed gel

## Process

1. In a suitable premix container prepare in advance a 10% EG312 solution in water (PHASE A) using a defloculator and a cold water bath
2. Prepare a premix of EDTA and Demineralized Water
3. Blend together in the main vessel the ingredients of the PHASE C
4. Add very slowly the PHASE B under gentle stirring in the main vessel
5. Then, add very slowly under stirring the PHASE A

### TIPS :

To ease the preparation of the formula, do not hesitate to use a cold water bath to decrease the viscosity of the blend and help to get something homogeneous avoiding the addition of bubbles

### Benefits of the formula

- Fragrance lasts longer
- Nice pick up

### Functions of ExpertGel EG312

- Texturizing agent
- Long lasting effect





## *Notes*

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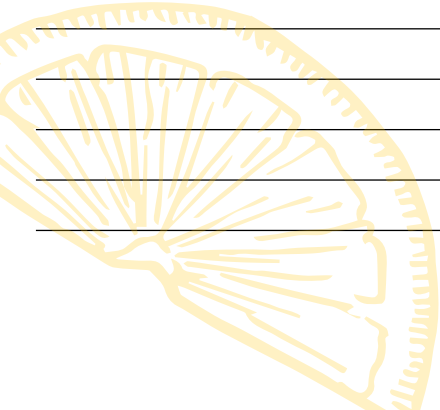
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*Nous contacter :*

Contact@polymerexpert.fr  
+33 (0)5 56 04 02 00



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