



SMARTGEL™

IMCD Personal Care Business Group



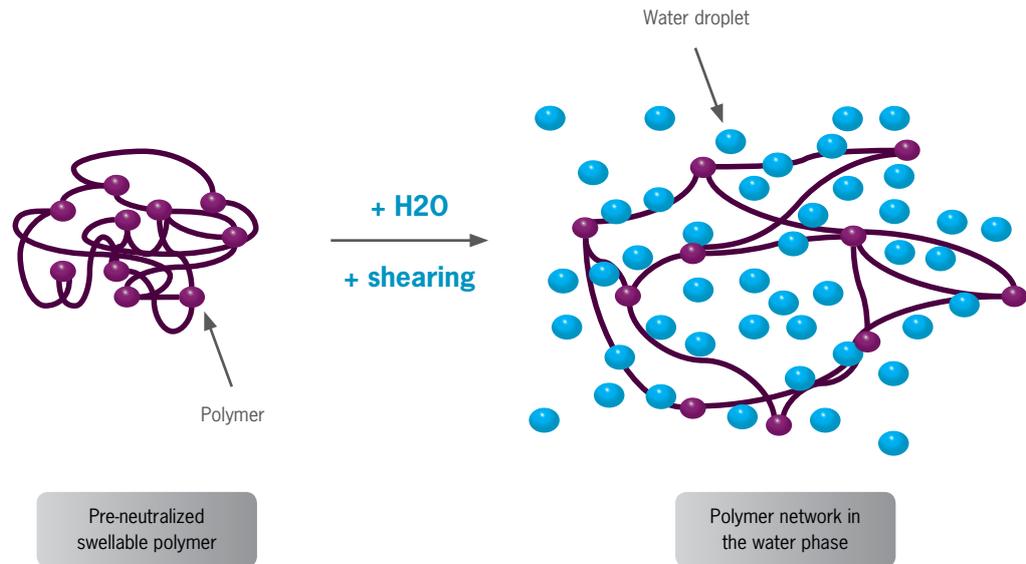
IMCD

Value through expertise



SMARTGEL™

The rheological properties of cosmetic products play a pivotal role in their success. It is very important that their physical behaviour, at each stage of use (from the initial pick up, its spreadability, through to skin penetration), is appropriate and desirable. Moreover the penetration of active ingredients into the skin, the efficacy of sunscreens as well as a product's overall stability are all tightly linked to the formulation's rheology.



ACRYLIC POLYMER

Acrylic polymers are widely used in personal care applications as they allow for lower emulsifier content and assist with stability without restricting formulations. These polymers are typically based on acrylic acid, acrylic esters and amino functional monomers. The chemical structure of each polymer is designed to enhance specific performances like: thickening efficiency, stabilisation, self-emulsifier efficiency.

SMARTGEL™ RANGE

The SMARTGEL™ range of powder and semi solid dispersion polymers is a family of ready-to-use acrylic polymer derivatives, which can be added at any stage of the manufacturing process. They are unbeatable in terms of their compatibility with polar to non polar emollients.

The new SMARTGEL™ range has outstanding benefits and properties. SMARTGEL™ will give the formulator endless new opportunities to thicken easy systems, as well as helping with the viscosity of systems that are notoriously hard to thicken.

COMPARATIVE CHART

	SMARTGEL™ L40	SMARTGEL™ HP	SMARTGEL™ P110	SMARTGEL™ MO37
	Must have material	Go for sophisticated skinfeel	Effective as powder, easy as a solution	I love cationics! Think positive
INCI name	Polyacrylamide / C13-14 Isoparaffin / Laureth-7	Sodium Polyacrylate, Hydrogenated Polydecene, Trideceth-6	Sodium Acrylate / Sodium Acryloyldimethyl Taurate Copolymer	Polyquaternium 37, Mineral Oil (Paraffinum Liquidum), Trideceth-6
Thickening capacity	****	****	**	***
Emulsifying capacity	****	****	****	****
PH of Use	2 - 11	5 - 7	2 - 11	4 - 9
Solvents	++++	++++	++++	++++
Oxidizing Media	+++	++	++++	+++
Cationics	Not compatible	Not compatible	Not compatible	Very good compatibility
Specific active ingredients compounds	AHA		AHA, DHA, glycolic acid	Cationics, hair dyes, Amodimethicones, Peptides, Proteins (at low pH)
Use level	0,5 - 5%	0,2 - 4%	0,2 - 3%	0,2 - 4%
Rehological behaviour	Pseudo plastic and non thixotropic	Pseudo plastic and non thixotropic	Pseudo plastic and non thixotropic	Pseudo plastic and non thixotropic
Sensoriality on application	Very good spreading, fresh	Very good spreading, lightly fresh	Excellent spreading, highly fresh	Very good spreading, lightly fresh
Afterfeel	Lightly greasy, no sticky, very quickly absorbed by the skin	Lightly greasy, no sticky, lightly smooth, easily absorbed by the skin	No greasy, no sticky, smooth, very quickly absorbed by the skin	No greasy, no sticky, smooth, very quickly absorbed by the skin
Specific features	Acidic and Alkaline medium suitability Mineral, oxidizing media suitability Gives soft and unctuous gelcream texture	Acrylamide - free Paraffin - free Gives soft and smooth textures due to the Hydrogenated Polydecene	Mineral oil - free EO - free Acidic and Alkaline medium suitability Mineral oxidizing media suitability Gives light and melting textures, with non sticky and non greasy after-feel	Thickens cationic aqueous solutions. Suspends solid particles Highly compatible with cationics Not irritant for the skin Rub-in and spreadability of highly thick and compact creams are easier and more uniform
Applications	Used in any kind of personal care applications	Used in skin care products where nourishing properties are required	Used in body hair and skin care (body and face) products	Used in both cationic hair and skin products
Mainly recommended in	Body care Make up Self tanning Sun care	Body care Baby care Nourishing products Massage gels	Hydro-alcoholic solutions Serum Gel-cream Make up Sun care Self tanning	Hair care Hair styling Sun care Body care

SENSORIAL PROPERTIES

Aqueous gels and emulsions made with SMARTGEL™ have a similar characteristic fluidity and slippery (pick up). When being applied to the skin they are fresh and spread very easily. They are neither sticky nor greasy and they are easily absorbed by the skin.

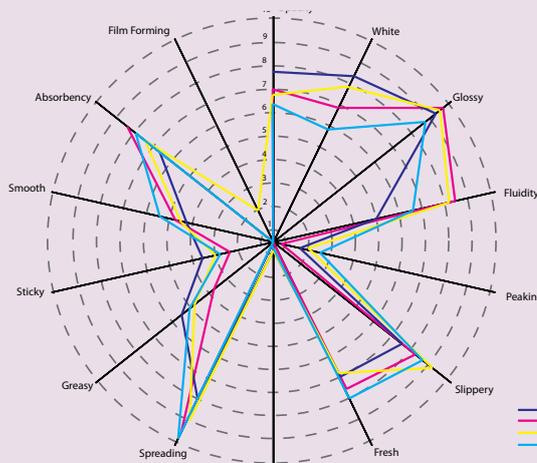
SMARTGEL™ L40: higher fluidity, less greasy and slightly more absorbent. It forms white and lightly gloss emulsion. It is adapted for light products.

SMARTGEL™ HP: slightly greasier and slightly less absorbent. It forms white and glossy emulsion. It is adapted for nourishing products.

SMARTGEL™ M037: good fluidity, good spreadability and higher slippery. It forms white and glossy emulsion. It is adapted for body lotions, hair products.

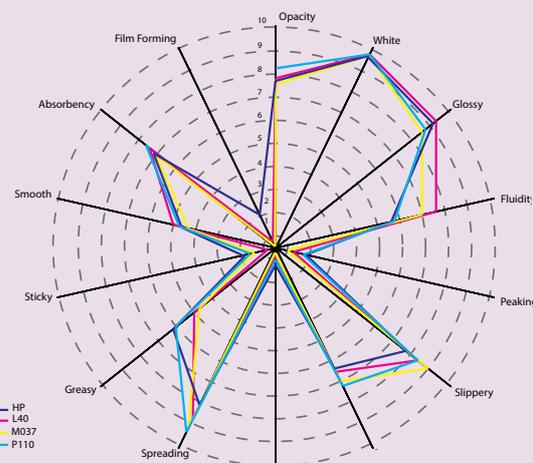
SMARTGEL™ P110: excellent spreadability, smooth and no greasy, high absorbent. It forms white and lightly opaque emulsion. It is adapted for face cream-gel and light emulsion.

FIGURE 1
Sensory Properties of four gels with 1% SMARTGEL™
(The average of 14 descriptors)



Formulations tested:
Aqueous gels with 1% polymer each grade, 1% preservative.

FIGURE 2
Sensory Properties of four gels with 1% SMARTGEL™, 10% Ester.
(The average of 14 descriptors)



Formulations tested:
Emulsions 1% polymer (each grade), 10% ester, 1% preservative.

SAFETY AND REGULATORY

The SMARTGEL™ series has an unblemished safety record stretching back several decades.

- Non irritating, non sensitizing, suitable for both leave-on and rinse-off personal care applications.
- Fully compliant with European and US cosmetics standards.
- Fully synthetic, so free of animal and vegetable traces and toxins.



SMARTGEL™ L40

INCI Name: Polyacrylamide & C13-14 Isoparaffin & Laureth-7

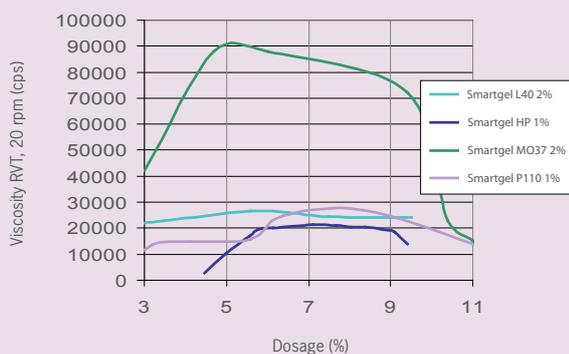
FEATURES	BENEFITS
Liquid product	Easy to use
Inverse phase emulsion: The polymer swells immediately in water at room temperature, without any neutralization	Cold process emulsion Addition at any step of formulation Viscosity adjusting Low shearing force required Reduction of production costs Easy distribution of the oil phase Easy to work with heat sensitive ingredients
Rheology: pseudoplastic and non thixotropic	Good spreadability on the skin, invisible polymer film forming, light feel
Effective pH range: 2 - 11	Can be used in the broad range of Personal care applications. Even in extreme conditions
Dosage: 0,5 - 5%	Highly efficient viscosity performances with low amount of emulsifier providing mild cosmetic products
Temperature stable	High flexibility; Viscous and stable formulation even at high temperature
Compatibility with all oily phase	High flexibility on formulation
Compatibility with minerals and oxidizing	Elegant and stable formulation with Oxidizing and Mineral additives
Sensorial properties	Good spreadability and skin feel; Gives soft and unctuous gel-cream texture
Application	Broad range of Skin care gel-cream and O/W emulsions; make up, self tanning, sun care products

PRODUCT DESCRIPTION

SMARTGEL™ L40 is a ready to use anionic fluid emulsion at 45% of active - Polyacrylamide. It is a thickening and stabilizing agent for emulsions. It is a highly efficient thickener for extreme media (highly acidic, highly alkaline or oxidizing) and it stabilizes mineral additives.



FIGURE 3 Effect of pH on Viscosity



- The thickening power and performance of SMARTGEL™ grades vary according pH range.
- SMARTGEL™ L40 and SMARTGEL™ P110 are effective over a broad pH range; in both acidic and alkaline medium they are able to develop substantial and stable viscosity.
- SMARTGEL™ HP and SMARTGEL™ MO37 optimal performance range is between pH 5 - 7.

SMARTGEL™ HP

INCI Name: Sodium Polyacrylate, Hydrogenated Polydecene, Trideceth-6

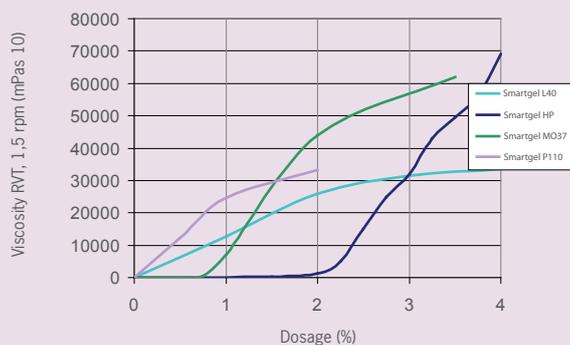
FEATURES	BENEFITS
Liquid product	Easy to use
Inverse phase emulsion: The polymer swells immediately in water at room temperature, without any neutralization	Cold process emulsion Addition at any step of formulation Post addition Reduction of production costs Low shearing force in production Easy distribution of the oil phase Easy to work with heat sensitive ingredients
Rheology: pseudoplastic and non thixotropic	Good spreadability on the skin, invisible polymer film forming, light feel
Effective pH range: 5 - 7	Can be used in Face/Neck and body care products
Dosage: 0,2 - 4%	Highly efficient viscosity performances with low amount of emulsifier providing mild cosmetic products
Temperature stable	High flexibility; Viscous and stable formulation even at high temperature
Acrylamide - free; Paraffin - free	Perfect for acrylamide and paraffin free concepts
Compatibility with all oily phase	High flexibility of formulation
Excellent sensorial properties	Improve skin feel and spreadability; Impart elegant and nourishing after feel
Application	All Skin care products where nourishing and light properties are required

PRODUCT DESCRIPTION

SMARTGEL™ HP is an anionic fluid inverse emulsion at 57,5% of active - Sodium acrylate polymer. It is a thickening and stabilizing agent for emulsions in the form of a neutral, ready to use fluid emulsion.



FIGURE 4 Viscosity vs Concentration



- The SMARTGEL™ series are very efficient and cost effective thickeners.
- They develop stable and viscous gels with as little as 0,2 to 4% use level (see figure 4).

SMARTGEL™ P110

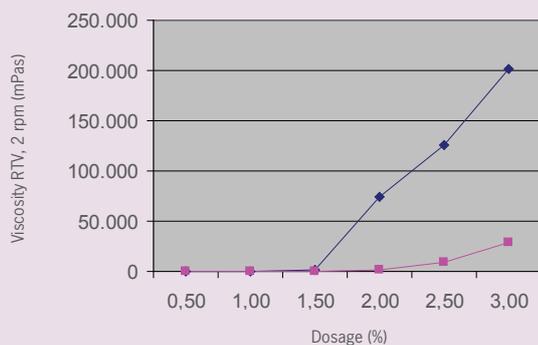
INCI Name: Sodium Acrylate / Sodium Acryloyldimethyl Taurate Copolymer

FEATURES	BENEFITS
Powder product	Easy to use
The polymer swells immediately in water at room temperature, without any neutralization	Cold process emulsion Addition at any step of formulation Viscosity adjusting Low shearing force required Reduction of production costs Easy to work with heat sensitive ingredients
Rheology: pseudoplastic and non thixotropic	Good spreadability on the skin and hair, invisible polymer film forming, light feel
Effective pH range: 2 - 11	Can be used in the broad range of Personal care applications. Even in extreme conditions
Dosage: 0,2 - 3%	Highly efficient viscosity performances with low amount of emulsifier providing mild cosmetic products
Temperature stable	High flexibility; Viscous and stable formulation even at high temperature
Compatibility with minerals and oxidizing	Elegant and stable formulation with Oxidizing and Mineral additives
Sensorial properties	It provides light, smooth and melting textures, with non sticky and non greasy after-feel. Its unique rheology profile helps spreading high viscous products
Application	Hydro-alcoholic solutions, Serum, Gel-cream, Light O/W emulsions, Sun care, Self tanning

PRODUCT DESCRIPTION

SMARTGEL™ P 110 is an anionic acrylic powder at 85% of active content- ATBS / sodium acrylate copolymer. It is typically used to thicken aqueous solutions and to stabilize O/W emulsions, even at low pH. Ready to use anionic acrylic powder.

FIGURE 5 Thickening capability with electrolytes



- The SMARTGEL™ series are compatible with electrolytes
- The figure 5 shows SMARTGEL™ P110 thicken efficacy (Aqueous solution 0,4% NaCl.)

SMARTGEL™ MO37

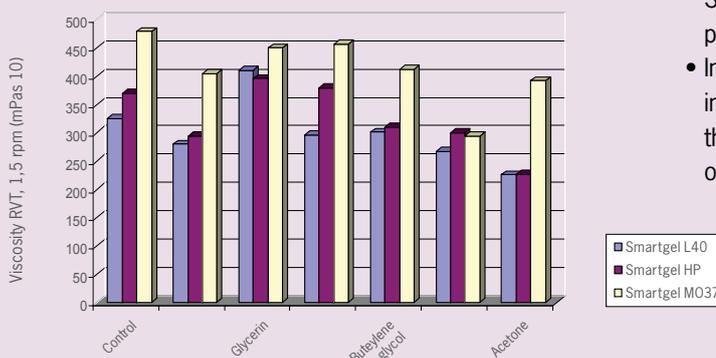
INCI Name: Polyquaternium 37, Mineral Oil (Paraffinum Liquidum), Trideceth-6

FEATURES	BENEFITS
Liquid product	Easy to use
Oily dispersion: The polymer swells immediately in water at room temperature, without any neutralization	Cold process emulsion Addition at any step of formulation Viscosity adjusting Low shearing force required Reduction of production costs Easy distribution of the oil phase Easy to work with heat sensitive ingredients Not Irritating
Rheology: pseudoplastic and non thixotropic	Good spreadability on the skin and hair, invisible polymer film forming, light feel
Effective pH range: 4 - 9	Elegant and stable formulation even in extreme conditions
Dosage: 0,2 - 4%	High efficiency with low amount of emulsifier providing mild cosmetic products
Temperature stable	High flexibility; Viscous and stable formulation even at high temperature
Compatibility with Cationics	Elegant and stable formulations with conditioning agents, cationics, hair dyes, amodimethicones, peptides, proteins
Sensorial properties	Rub-in and spreadability of highly thick and compact creams are easier and more uniform. It imparts a non greasy and non sticky afterfeel
Application	Skin and Hair conditioning creams

PRODUCT DESCRIPTION

SMARTGEL™ MO 37 is a cationic acrylic copolymer at 53% of active content, dispersed in medicinal grade oil and containing a non-ionic activating surfactants. It is typically used to thicken cationic aqueous solutions, to stabilize O/W emulsions and to suspend solid particles. A neutral, ready to use fluid emulsion.

FIGURE 6 Thickening capability with solvents



- Figure 6 shows examples of SMARTGEL™'s effect on viscosity in presence of commonly used solvents.
- Inverse phase emulsions - products in the SMARTGEL™ range are able to thicken and emulsify aqueous solutions of up to 50% solvents with just 3% w/v.



Formulation examples with SMARTGEL™ products



Calming body milk – SMARTGEL™ L40 (IMCD Ref. P00908A)

PHASE	INGREDIENTS (INCI Names)	% W/W	
A	Aqua	75,15	
	Disodium EDTA	0,08	
	Hydroxyethylcellulose	0,47	
	Glycerin	3,10	
B	Hydrogenated polydecene	15,60	
	Decyl glucoside	1,20	
	Butylparaben, Ethylparaben, Isobutylparaben, Methylparaben, Phenoxyethanol, Propylparaben	0,80	
	Wheat extract	1,00	
	Polymethylsilsesquioxane, HDI/Trimethylol hexyllactone crosspolymer	1,00	
	C	Polyacrylamide and C13-14 isoparaffin and Laureth-7	1,40
	D	Parfum	0,20
		100	

Eye serum – SMARTGEL™ HP (IMCD Ref. P05410A)

PHASE	INGREDIENTS (INCI Names)	% W/W
A	Aqua	74,50
	Sodium polyacrylate	1,5
	Hydrogenated polydecene	
	Trideceth-6	
B	Aqua	1,00
	Jajoba waxpeg - 120 esters	
	Glycerin	2,00
B	Dimethicone	13,00
	Dipentaerythyl hexa C5-9 acid esters	4,00
	Dimethicone, Dimethiconol	3,00
C	Butylparaben, Ethylparaben, Isobutylparaben, Methylparaben, Phenoxyethanol, Propylparaben	0,80
D	Parfum	0,20
		100

Body performance firm butter – SMARTGEL™ P110 (IMCD Ref. 02/S/P12404)

PHASE	INGREDIENTS (INCI Names)	% W/W
A	Aqua	70,65
	Disodium EDTA	0,05
	Sodium Hyaluronate	0,10
	Aloe barbadensis	0,50
	Xylityl glucoside, Xilitol, Xylitol	1,50
	PEG-8	0,50
	Propylene glycol	1,50
	Carbomer	0,15
A¹	Aqua	3,00
	Sodium metylparaben	0,20
B	Jojoba wax	2,50
	Isononyl isononanoate	1,80
	C12-13 Alkyl lactate	1,50
	Ceterayl alcohol	1,50
	Glyceryl stearate, PEG-100 stearate	1,00
	Cetearyl alcohol, Cetearyl glucoside	1,50
	Stearic acid	0,50
	Olive butter	0,20
	Avocado butter	0,50
	Veggie soja wax	0,50
	Dimethicone	8,00
	Preservative	1,00
	C	Triethanolamine
D	Parfum	0,40
E	Sodium acrylate/sodium acryloyldimethyl taurate copolymer	0,80
		100

Hair gloss balm serum – SMARTGEL™ MO37 (IMCD Ref. P05310A)

PHASE	INGREDIENTS (INCI Names)	% W/W
A	Aqua	to 100
	Preservative	qs
	Hydroxyethyl cellulose	0,30
	Polyquaternium 37, Mineral oil, Trideceth-6	1,00
	Cetrimonium chloride	0,50
	Dimethicone copolyol	1,50
B	Dimethicone	10,00
	Trimethylsiloxyphenyl dimethicone	1,50
	Parfum	0,15
C	CI42051	0,015
	Aqua	1,50
	Amodimethicone, Trideceth-10	
		100

WHY SHOULD YOU CONSIDER SMARTGEL™ FOR YOUR NEXT FORMULATION?

- Easy to handle and ready to use polymers. Neutralization is not required.
- Cold process, addition at any step of formulation with low shearing force. They allow a reduction of production costs.
- Low level use, they are very efficient and cost effective thickeners.
- Trouble free formulation, they emulsify almost all types of oil phases, stable and efficient in wide pH range and at high temperature.
- The SMARTGEL™ range can help the formulator to create elegant formulation even with critical ingredients as: highly acidic, highly alkaline, oxidizing, mineral, self tanning.
- Superb sensorial properties in both emulsion and gel cream even with low content of oily phase.

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