

BRINGING LIFE  TO PLASTICS

# PP tapes

LONG  
LASTING



FOR HEAVY  
DUTY USE



HIGH  
PERFORMANCE  
ADDITIVES



IF YOUR BIG BAGS GET EXPOSED  
TO THE ELEMENTS ...



UV STABILISATION  
OF PP TAPES



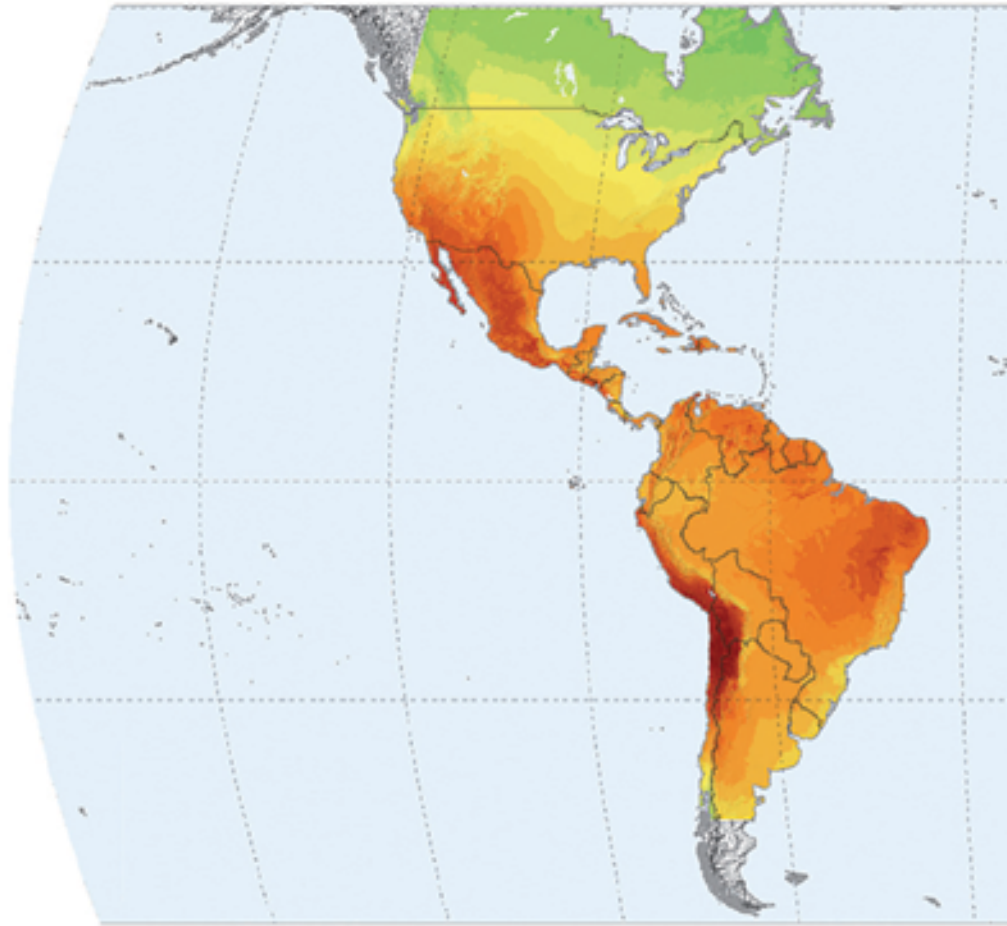


## WHAT YOU NEED TO KNOW ABOUT SOLAR RADIATION

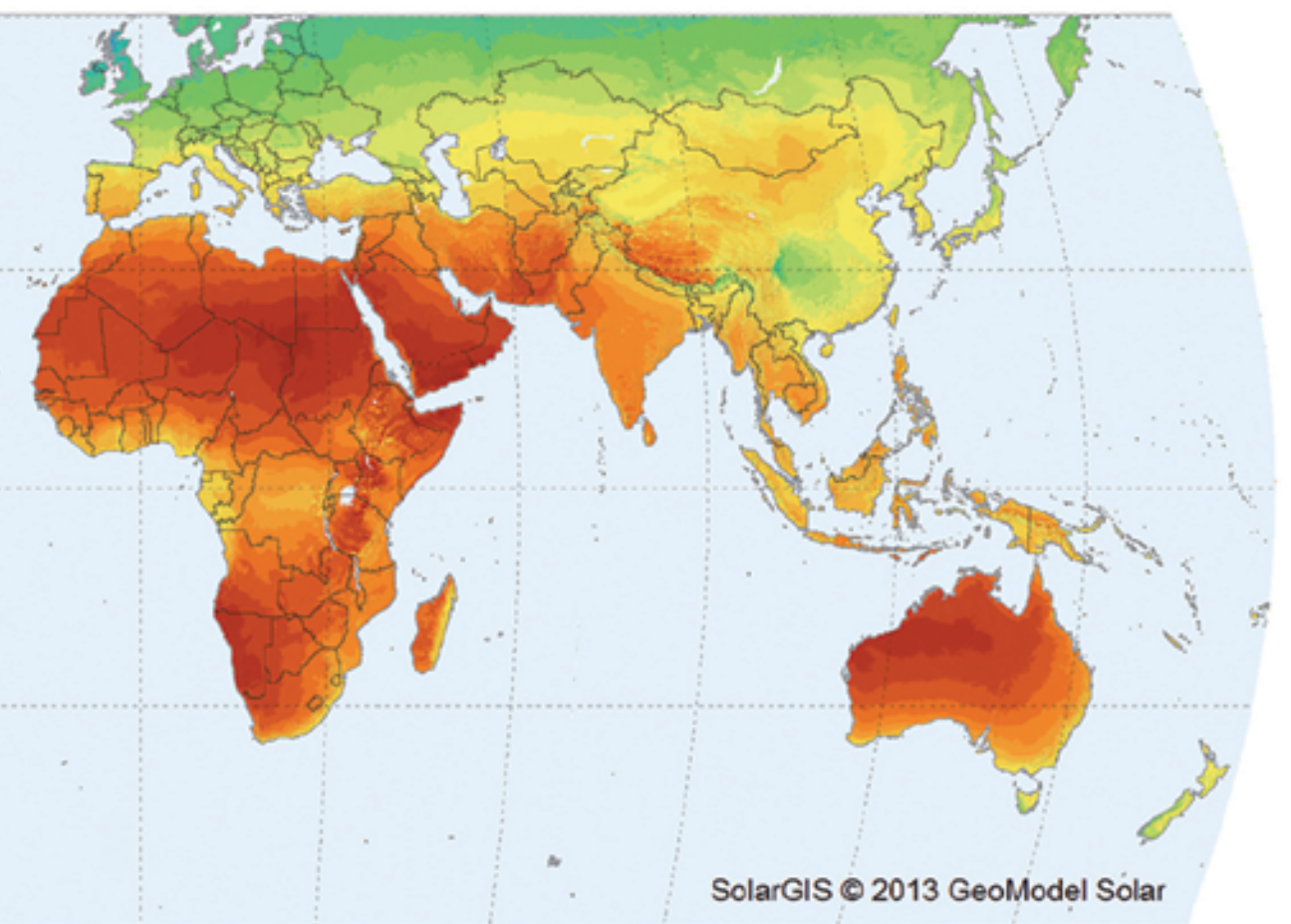
Good UV stabilisation of a PP tape should ensure that at least 50% of the initial tensile strength is present in the woven fabric at the end of its desired service life. It is important to note that each type of UV stabilisation must be designed to withstand the maximum possible annual solar radiation that typically occurs in the geographic location where the final product is used. The solar radiation depends on climatic factors and can vary widely according to the place of exposure.



GLOBAL  
RADIATION MAP



# GLOBAL RADIATION



It is therefore vitally important to design a light stabiliser for PP tapes to suit the geographical area in which the final product will be used.

Our product recommendations are based upon solar radiation according to place of exposure in the form of kLy/year - units. Reductive chemical influences from the atmosphere or from contact with chemicals, and the addition or deteriorating dyes or additives to the polymer - whether intentional or not - must always be considered and require specific testing before product recommendations are made.

#### THE FOLLOWING SOLAR RADIATION VALUES CAN BE CONSIDERED NORMAL

The solar radiation energy is usually expressed in kLy (Kilolangely) units.  
A conversion to other energy units is possible as follows:

1 kLy = 1000 Ly (Langely)

1 kLy = 4187.5 J/cm² = 4.19 kJ/cm²

1 kLy = 11.62 kWh/m²

AREA	KLY
Scandinavia	60-80
Central Europe	100-120
Southern Europe	120-160
Northern Africa	160-180
Northern Russia	80
Southern Russia	140
Australia	180-200



SEVEN WORLD CLIMATES

2\_POLAR

6\_HUMID MICRO THERMAL

1\_DRY DESERT

# ARTiFiCiAL WEATHER

## THE RADiATiON SPECTRA

RANGE	WAVELENGTH	% OF LIGHT
UV-C	< 280 nm	0
UV-B	280-320 nm	0.5
UVA-A	320-400 nm	5.6
VIS - visible	400-800 nm	
IR-A	800-1400 nm	29.4
IR-B	1400-3000 nm	12.7
IR-C	> 3000 nm	"Negligible for testing"

## SPECTRAL SENSiTiViTiES OF POLYMERS

PE	300-310, 340
PP	290-300, 330, 370
PS	320-325
PA	290-315
PC	280-310
SAN	310-330, 290
ABS	300-310, 370-385
PMMA	290-315

All indications in nanometre wavelengths  
Literature: ATLAS MTS

7\_UNDIFFERENTIATED HIGHLANDS

5\_HUMID MESO THERMAL

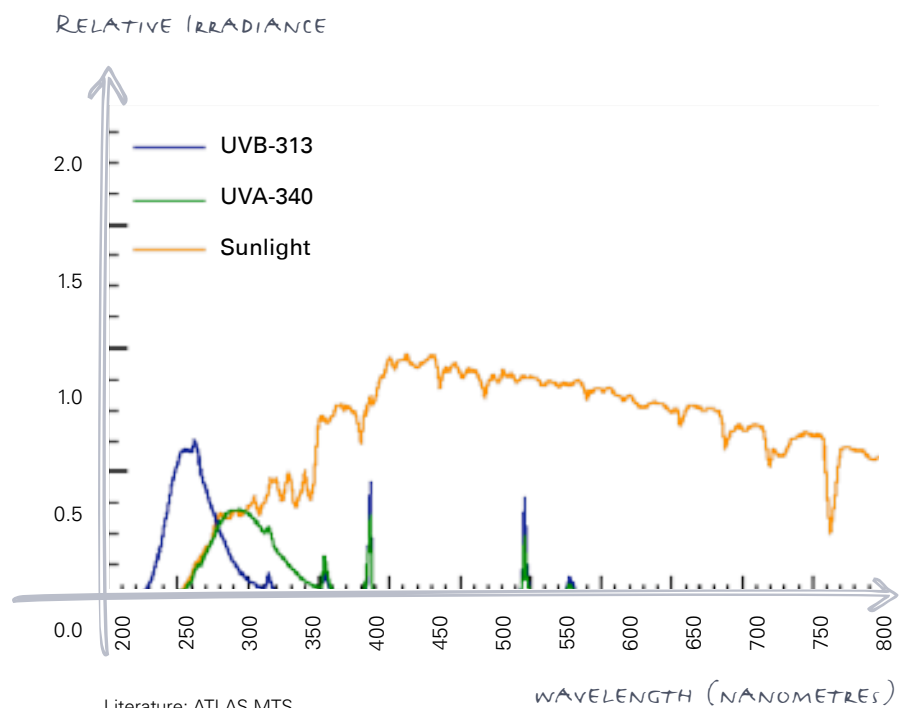
4\_SUBTROPICAL

3\_TROPICAL RAINY

ERING

## SUNLIGHT VS. FLUORESCENT UV LAMP

Fluorescent UV lamps simulate narrow UV radiation under specific conditions. They do not cause heating effects through visible or infrared light. A comparison with service life performance or a correlation with outdoor exposure is not possible.





## WHICH INFLUENCES CAN DEGRADE THE UV STABILISATION OF PPTAPES

### **THE SERVICE LIFE OF UV-STABILISED PPTAPES IS SIGNIFICANTLY**

**INFLUENCED** by the quality of the polymer (or polymer blends) to be stabilised. Once selected, polymers should not be changed. New polymers should be carefully evaluated in tests for whether they can degrade the light stabilisation - the same procedure is recommended if new additives are used.

### **APART FROM OTHER CRITERIA, THE WALL THICKNESS OF THE TAPES**

to be stabilised is especially critical to the design of a UV stabiliser. Extreme weakening of the wall thickness through extreme stretching leads to significant shortening of the tapes' expected service life.

**PIGMENTATION CAN IMPROVE OR DEGRADE THE UV STABILITY** of a UV-stabilised polymer. In our combination Colour/UV Stabiliser products, we only use compatible pigments which have proven their performance on the basis of long-term experience.

**SOME CONTACT MEDIA** (such as agro-chemicals) can decrease the UV performance of tapes. In particular, additives containing sulphur, flame retardants containing acid-splitting halogen and critical packaging contents that come into direct contact with the tapes can lead to significant degradation of the UV stabilisation.

**POOR CUTTING QUALITY OF TAPES USING BLADES** with too much abrasive wear will cause oxidation and degradation of the polymer during exposure and increase the vulnerability of the tapes. This can further degrade good light stabilisation.

### **CALCIUM CARBONATE ( $\text{CaCO}_3$ ) IS FREQUENTLY USED IN**

**MASTERBATCH** as an antisplit additive in the production of PP tapes due to the better weaving properties it offers. It must be noted that specific impurities in some  $\text{CaCO}_3$  grades will cause considerable degradation of UV stabilisation. Selection of a  $\text{CaCO}_3$  masterbatch with a highly pure  $\text{CaCO}_3$  grade as used in our MAXITHEN® PP7A7120ASP Antisplit MB is very important.

**IT MUST BE CONSIDERED THAT DARK COLOURS** absorb more thermal energy during outdoor exposure, which speeds up the heat-related ageing process of the polymer itself; increased addition of light stabiliser may be necessary if such colours are used.



# PP TAPE RANGE



SINGLE  
MASTERBATCH

- \_ UV STABILISATION
- \_ ASP ANTISPLIT
- \_ AS ANTISTATIC
- \_ AO ANTIOXIDANT
- \_ FR FLAME RETARDANT
- \_ WHITE
- \_ BLACK



COMBiNATION  
MASTERBATCH

- \_ UV+ASP
- \_ ASP+WHITE

Further products  
on request



ALL iN ONE  
MASTERBATCH

- \_ UV+ASP+WHITE

Tailor-made combinations  
possible



PROTECTING FROM THE SUN  
ISN'T ALWAYS OBVIOUS

## SINGLE MASTERBATCH

### UV PROTECTION

**PP7AA1570UV:** High-efficiency HALS stabiliser, especially suitable for polypropylene, on PP carrier, for best price/performance ratio. Standard grade for PP tape fabrics for industrial packaging and technical applications

**PP7AA1570/11UV:** Lower concentration of standard grade PP7AA1570UV, recommended when the required service life/dosage rate of PP7AA1570UV would be too low for proper distribution of the active ingredient in the polymer melt

**PP72200UV:** High-efficiency oligomeric HALS stabilisers, on PP carrier, for best price/performance ratio. Standard grade for PP tape fabrics, **suitable for food contact**

**PP7AA7380/11UV:** Lower concentration of standard grade PP7AA7380UV, recommended when the required service life/dosage rate of PP7AA7380UV would be too low for proper distribution of the active ingredient in the polymer melt. For PP tape fabrics, **suitable for food contact**

**PP7AA7460UV:** High-efficiency oligomeric HALS stabiliser, especially suitable for polypropylene, combined with absorber for synergistic effects to further increase UV protection of packed goods, on PP carrier. For PP tape fabrics, **suitable for food contact**

**PP791360UVFR:** Special grade for high UV stabilisation performance combined with flame retardancy, halogen free, on PP carrier. For PP tape fabrics





## ANTISPLIT

**PP7A7120ASP:** High loaded (80%) selected high purity Antisplit Calcium Carbonate grade of low abrasivity on PP carrier. Offers smooth tape surface for good and dustless weaving process. For polypropylene tape fabrics, **suitable for food contact**

## ANTISTATICS

**PP791310AS:** Fast and efficient antistatic agent, migrating, on PP carrier, **suitable for food contact**

**UNS7A4420AS:** Polymeric permanent antistatic agent with immediate effect, non migrating. For fabrics made from polyethylene and polypropylene, **suitable for food contact**

## ANTIOXIDANTS

**PP792210AO:** Synergistic combination of process and long-term heat stabiliser, on PP carrier. For all types of woven fabrics made from polypropylene, **suitable for food contact**

## FLAME RETARDANTS

**PP7A8150FR:** High-performance flame retardant, low halogen content, compatible with HALS UV stabilisers, on PP carrier. For all types of woven fabrics made from polypropylene

**PP7AA1940UVFR:** High-performance flame retardant, halogen free, compatible with HALS UV stabilisers, on PP carrier. For all types of woven fabrics out of polypropylene

## WHITE & BLACK, COLOURS

**PP1131/70WHITE:** High loaded (70%) weather resistant and HALS compatible  $\text{TiO}_2$  pigment on PP carrier, **suitable for food contact**

**HP1139/60, HP1139/70WHITE:** High loaded (60%/70%) weather resistant and HALS compatible  $\text{TiO}_2$  pigment on PE carrier. For tapes made from polyethylene and polypropylene, **suitable for food contact**

**HP99611BLACK:** High colour strength UV protection carbon black, good dispersion, excellent compatibility with HALS UV stabilisers. On PE carrier, for tapes made from polyethylene and polypropylene, **suitable for food contact (EU)**

**HP98781BLACK:** High colour strength UV protection carbon black, good dispersion, excellent compatibility with HALS UV stabilisers. On PE carrier, for tapes made from polyethylene and polypropylene, **suitable for food contact (EU & FDA)**

Tailor-made formulations in each colour shade available upon request.





## MULTIFUNCTIONAL COMBINATION MASTERBATCH

### UV PROTECTION + ANTISPLIT

**PP7AA5540UVASP:** High-efficiency HALS stabiliser, especially suitable for polypropylene, combined with selected high purity Antisplit Calcium Carbonate grade of low abrasivity, on PP carrier, for best price/performance ratio. Standard grade for PP tape fabrics for industrial packaging and technical applications

**PP7AA5540/11UVASP:** Lower concentration of standard grade PP7AA5540UVASP, recommended when the required service life/dosage rate of PP7AA5540UVASP would be too low for proper distribution of the active ingredient in the polymer melt

**PP7AA7390UVASP:** High-efficiency oligomeric HALS stabilisers combined with selected high purity Antisplit Calcium Carbonate grade of low abrasivity, on PP carrier, for best price/performance ratio. Standard grade for PP tape fabrics, **suitable for food contact**

**PP7AA7390/11UVASP:** Lower concentration of standard grade PP7AA7390UVASP, recommended when the required service life/dosage rate of PP7AA7390UVASP would be too low for proper distribution of the active ingredient in the polymer melt. For PP tape fabrics, **suitable for food contact**

**PP1AA4541ASPWHITE:** All-in-one formulation of selected high purity Antisplit Calcium Carbonate grade of low abrasivity, combined with weather resistant, HALS compatible TiO<sub>2</sub> pigment, on PP carrier. Offers correct proportion of functional ingredient and white colour at favourable price level, no risk of wrong dosage and mix-ups in contrast with use of single components. For PP tape fabrics, **suitable for food contact**



## ALL IN ONE

**PP1AA4531UVASPPWHITE:** All-in-one formulation of high-efficiency HALS stabiliser, especially suitable for polypropylene, combined with selected high purity Antisplit Calcium Carbonate grade of low abrasivity, and with weather resistant, HALS compatible TiO<sub>2</sub> pigment, on PP carrier. Offers correct proportion of functional ingredients and white colour at favourable price level, no risk of wrong dosage and mix-ups in contrast with use of single components. Tailor-made solutions also available on request

**PP1AA3671UVASPPWHITE:** All-in-one formulation of high-efficiency HALS stabiliser, especially suitable for polypropylene, combined with selected high purity Antisplit Calcium Carbonate grade of low abrasivity, and with weather resistant, HALS compatible TiO<sub>2</sub> pigment, on PP carrier. Offers correct proportion of functional ingredients and white colour at favourable price level, no risk of wrong dosage and mix-ups in contrast with use of single components. Tailor-made solutions also available on request, **suitable for food contact**

## MISCELLANEOUS MASTERBATCH

Temperature & light exposure indicators, on-line-control for wall thickness and masterbatch dosage, counterfeit protection on request/under development





ALSO FOR HIGH-VALUE GOODS



## SLIP, POLYMER PROCESSING AID, ANTIBLOCK & COMBINATIONS

**HP7051E:** High-performance Erucamide slip agent, on PE carrier. Standard grade for all types of PE film, **suitable for food contact**

**HP7A8770PPA:** High-performance Polymer Processing Aid for improved processability of Polyolefines. Offers smooth surface of the films, less energy consumption of extrusion lines, reduces dye build-ups. On PE carrier, for all types of PE film, **suitable for food contact**

**HP7011/65AB:** Natural Silica Antiblock, on PE carrier. For all types of PE film, **suitable for food contact**

**HP7081ABGLE:** High-performance Erucamide slip agent combined with natural Silica Antiblock, on PE carrier. Standard grade for all types of PE film, **suitable for food contact**

**HP7AA7180ABGLE:** High-performance Erucamide slip agent combined with natural Silica Antiblock and Calcium Carbonate, on PE carrier. For all types of PE film, **suitable for food contact**

## UV PROTECTION

**HP79860UV:** High-efficiency oligomeric HALS stabiliser on PE carrier for best price/performance ratio, standard grade for PE Blown & Cast film and tapes, **suitable for food contact**

## ANTISTATICS

**HP7041/05AS:** Amine-based migrating antistatic agent on PE carrier, good price/performance ratio, **suitable for food contact**

**HP77571AS:** Amide-based migrating Antistatic agent on PE carrier, good price/performance ratio, non-corrosive, **suitable for food contact**

**UNS7A4420AS:** Polymeric permanent antistatic with immediate effect, non migrating. For all polyolefines, **suitable for food contact**





# PE-LINER RANGE

## FLAME RETARDANTS

**HP73940FR:** Halogenated flame retardant with good price/performance ratio, on PE carrier, for industrial packaging films

**HP7AA1460FR:** Halogen-free flame retardant, on PE carrier, for industrial packaging films

**HP791460UVFR:** Special grade for high UV stabilisation performance combined with flame retardancy, halogen-free, on PE carrier, for industrial packaging films

## WHITE & BLACK, COLOURS

**HP13301WHITE:** 70%  $\text{TiO}_2$  pigment for indoor use, on PE carrier. For films of  $>60 \mu$  made from polyethylene and polypropylene, [suitable for food contact](#)

**HP17201WHITE:** 60%  $\text{TiO}_2$  pigment for indoor use and 15% high purity chalk. For films of  $>60 \mu$  out of Polyethylene and Polypropylene, [suitable for food contact](#)

**HP100221WHITE:** 25%  $\text{TiO}_2$  pigment for indoor use and 50% high purity chalk. For films of  $>60 \mu$  made from polyethylene and polypropylene, [suitable for food contact](#)

**HP19201/HP19301WHITE:** 60/70%  $\text{TiO}_2$  pigment for indoor use. For multilayer films of  $>5 \mu/\text{layer}$ , made from polyethylene and polypropylene. Low lacing grade formulation, [suitable for food contact](#)

**HP99611BLACK:** High colour strength UV protection carbon black, good dispersion, excellent compatibility with HALS UV stabilisers. On PE carrier, for tapes made from polyethylene and polypropylene, [suitable for food contact](#) (EU)

**HP98211BLACK:** High colour strength carbon black for indoor application, good dispersion. On PE carrier, for tapes of  $>40 \mu$  made from polyethylene and polypropylene, for industrial packaging

Tailor-made formulations in each colour shade available upon request

## MISCELLANEOUS

Temperature & light exposure indicators, on-line-control for wall thickness and masterbatch dosage, counterfeit protection on request/under development

**BUSINESS UNITS OF GABRIEL-CHEMIE GROUP:**



Building & Agriculture



Home & Lifestyle



Packaging for Industrial & Consumer Goods



Cosmetics Packaging



Food & Beverage Packaging



Medical



**GABRIEL-CHEMIE**  
GROUP

GABRIEL-CHEMIE Gesellschaft m. b. H.

Industriestraße 1  
2352 Gumpoldskirchen  
AUSTRIA

Tel. +43 2252 636 300

Fax +43 2252 627 250

info@gabriel-chemie.com

**[WWW.GABRIEL-CHEMIE.COM](http://WWW.GABRIEL-CHEMIE.COM)**