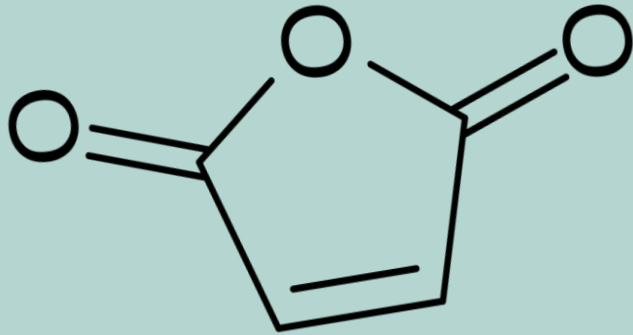
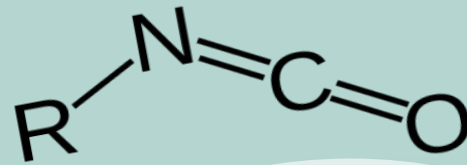


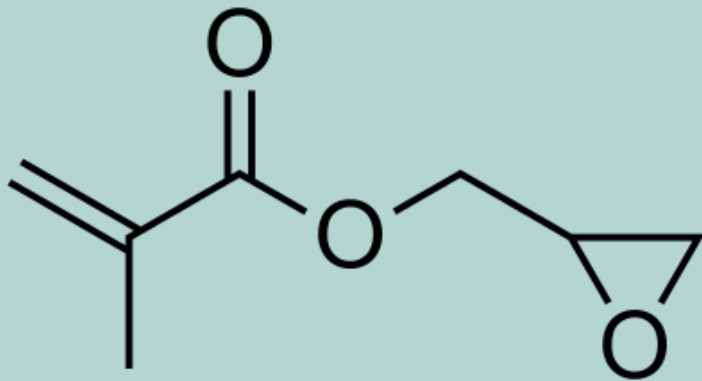
MAH - Maleic anhydride



NCO - Isocyanate



GMA - Glycidyl methacrylate



GRAFT POLYMER
COMBINE INCOMPATIBLE

FUNCTIONAL MODIFIERS

2020

VERSATILITY OF GRAFTING MONOMERS

MALEIC ANHYDRIDE (MAH)

GLYCIDYL METHACRYLATE (GMA)

METHYL METHACRYLATE (MMA)

ACRYLIC ACID (AAc)

BUTYL ACRYLATE (BA)

VINYL ACETATE (VA)

DIETHYL MALEATE (DEM)

ACRYLAMIDE (AAm)

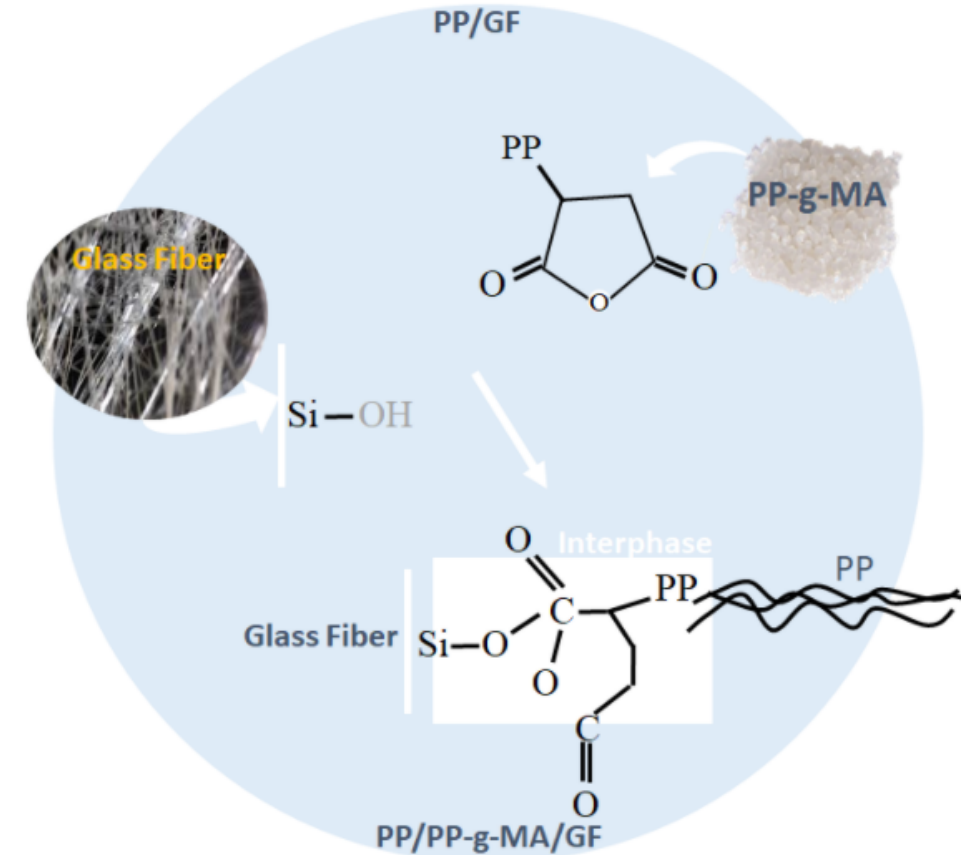
ACRYLONITRILE (ACN)

OTHERS

INTRODUCTION

Compatibilizers are used to promote interfacial adhesion in polymer compounds, which are otherwise immiscible. They usually contain multiple functional groups, with both groups being compatible with one of the phases. These molecules tend to concentrate at the interfaces and stabilize them, thus allowing finer dispersion and compatibility of mutually incompatible pairs.

Coupling agents are chemicals which improve the interfacial properties of mineral fillers and polymers (they reduce the interfacial tension which is disadvantageous rather than advantageous, but simultaneously they reduce the agglomeration tendency of filler particles, thus improving their accessibility to polymer molecules). Coupling agents usually react with the filler surface but exhibit at least one side group which react with the polymer matrix or is at least compatible with it



ADVANTAGES OF GRAFT POLYMER GRAFTING TECHNOLOGIES

- **> 95%** Grafting **efficiency**: Almost no residual chemicals LOWER VOC
- “Blocked Grafting”: The material can be safely stored for at least 36 months
- **HIGH** grafting degree UP to 3.5%: **Up to 60% less compatibilizers required in the final use.**
- Very **slight** MFI reduction when comparing grafted materials to virgin material.
- **No** material **degradation**, white color of grafted material and no additional antioxidants are present.
- **Versatility** of Grafting Monomers

GRAFTED MATERIALS (examples)

GRAFTABOND™		Grafting Degree [%]	Form	Olefin/PA Blends	Glass Fiber or Mineral Filled Olefins	Natural Fiber Filled Olefins	Metal Adhesion	Polymer Film Adhesion	Non-Halogen FR	Flow Enhancer	Dispersing Agent (Pigments)	Mixed Recyclates P E/PP	ABS	PA	SAN	PC	Polyesters (PET,PBT)
HD-MAH	02030	2,5-3	Granule	•		•	•	•	•								
HD-GMA	02530	2,5-3	Granule													•	•
LD-MAH	00130	2,5-3	Granule				•	•	•								
LD-MAH	02030	2,5-3	Granule	•		•	•	•	•								
LD-MAH	11530	2,5-3	Granule		•	•				•	•						
LL-MAH	00230	2,5-3	Granule				•	•	•								
LL-MAH	02030	2,5-3	Granule	•		•	•	•	•								
LL-GMA	00330	2,5-3	Granule														•
AP/L-MAH	00110	0,5-2,0	Granule	•										•			
AP-GMA	00530	≈2,5-3	Granule				•									•	•
PO-SAN	00647	3,5-4	Granule										•		•		
EP-MAH	02010	0,5-1,3	Granule	•										•			
PP-MAH	02030	2,5-3	Granule	•			•	•									
PP-MAH	70025/ 100025	≈2,5	Granule		•	•			•	•	•						
PP-GMA	02030	2,5-3	Granule													•	•

We provide any type of grafted solution, different MFI | Monomer | Grafting % (full product adjustment according to the technical need)

GRAFTED MATERIALS (examples)

GRAFTABOND™		Grafting Degree [%]	Form	Olefin/PA Blends	Glass Fiber or Mineral Filled Olefins	Natural Fiber Filled Olefins	Metal Adhesion	Polymer Film Adhesion	Non-Halogen FR	Flow Enhancer	Dispersing Agent (Pigments)	Mixed Recyclates P E/PP	ABS	PA	SAN	PC	Polyesters (PET,PBT)
EV-GMA	00525	≈2,5	Granule													•	•
EB-MAH	00730	2,5-3	Granule	•			•	•						•			
EB-MAH	00710	0,5-1,3	Granule											•			
EB-GMA	01030	2,5-3	Granule				•	•								•	•
EB-GMA	01520	-	Granule														•
SB-MAH	03020	1,5-2	Granule	•										•	•		
SB-MAH	00220	1,5-2	Granule	•										•	•		
SB-GMA	00330	2,5-3	Granule				•								•	•	•
SEBS-MAH	02520/30	≈2	Granule	•	•	•								•			
SEBS-GMA	02520	≈2	Granule			•										•	•

We provide any type of grafted solution, different MFI | Monomer | Grafting % (full product adjustment according to the technical need)

GRAFTED MATERIALS (examples)

GRAFTABOND™		Grafting Degree [%]	Form	Olefin/PA Blends	Glass Fiber or Mineral Filled Olefins	Natural Fiber Filled Olefins	Metal Adhesion	Polymer Film Adhesion	Non-Halogen FR	Flow Enhancer	Dispersing Agent (Pigments)	Mixed Recyclates P E/PP	ABS	PA	SAN	PC	Polyesters (PET,PBT)
SAN-MAH	01530	2,5-3	Granule										•		•		
ABS-MAH	01510	0,5-1,3	Granule										•		•		
CPE-MAH	00020	1,5-2	Powder														
ECO-R/M	00325	≈2	Granule									•					
ECO-R/G	00525	≈2	Granule									•					•
UHHD-GMA	00020	1,5-2	Granule	•		•	•	•	•								
UHHD-MAH	00020	1,5-2	Granule													•	•
MBS – GMA	00030	3	Powder/Granules													•	

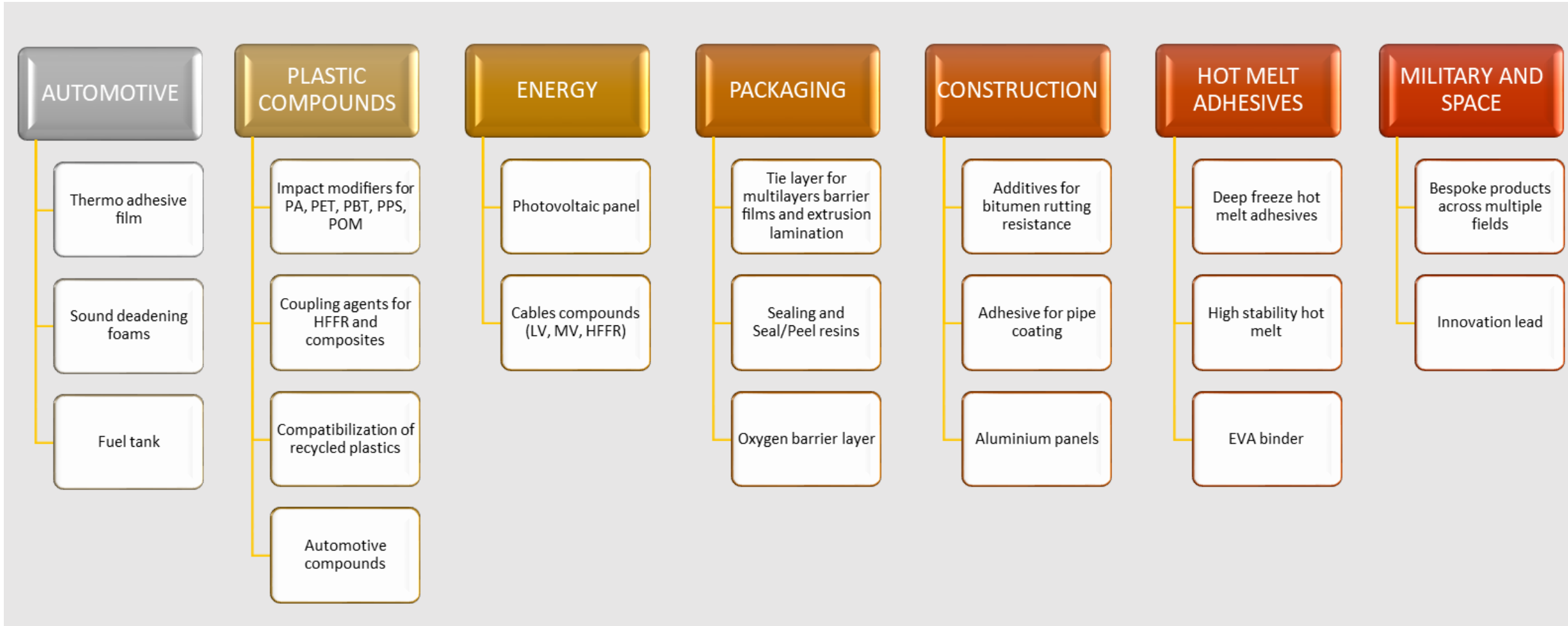
We provide any type of grafted solution, different MFI | Monomer | Grafting % (full product adjustment according to the technical need)

GRAFTED MATERIALS in BLENDS (examples)

GRAFTABOND™		Grafting Degree [%]	PET/PE 1/5 of PE	PA/PE 1/5 of minor component	PA/PP 1/5 of minor component	PLA/PP 1/5 of minor component	PLA/PE 5-10 % of chosen grades	PC/ABS alloys 5 % of chosen grades	PC/PBT alloys 5-10 % of chosen grades
HD-MAH	02030	2,5-3		•					
HD-GMA	02530	2,5-3	•				•	•	•
LD-MAH	02030	2,5-3		•					
LL-MAH	02030	2,5-3		•					
PP-MAH	70025	≈2,5			•				
PP-GMA	02030	2,5-3				•		•	•
EB-MAH	00730	2,5-3		•					
EB-GMA	01030	2,5-3	•				•	•	•
SB-MAH	03020	1,5-2		•					
SB-GMA	00330	2,5-3	•			•	•	•	•
ABS-MAH	01510	0,5-1,3						•	
UHHD-MAH	00020	1,5-2		•					
UHHD-GMA	00020	1,5-2	•				•	•	•

We provide any type of grafted solution, different MFI | Monomer | Grafting % (full product adjustment according to the technical need)

WHERE TO USE



WHAT MAKES GP UNIQUE



Use **proprietary co-agents** and **redox initiating system** for grafting



Use of **Nitroxide Mediated Polymerization** for controlled grafting reactions



Co-continuous nano-morphology approach for creation polymeric alloys



Interpenetrating Polymer Networks (IPN)



Thermo-Reversible Crosslinking polymers and **Vitrimers**



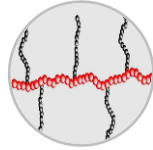
Smart Polymers
Self-Healing polymers



In-house synthesis of unique "**nitroxide stable radicals**" (TEMPO) for high-tech composite materials – proprietary process

BUSINESS MODEL: INNOVATIONS

GRAFT / BLOCK POLYMERS



POLYMERIC NANO ALLOYS



CROSSLINKING



POROUS



SYNTHESIS



INNOVATIVE TECHNOLOGIES

- Flow induced crystallization
- Solid Phase Grafting
- Solution Grafting
- Fillers Treatments
- Powders Hybridization
- Hot ozonolysis/plasma modification
- Nitroxide Mediated Polymerization
- Micro/Nano Porous polymer carries

To support its unique modification technologies, GP has built the **R&D** center including **Laboratory** and **Synthesis facilities**



GRAFT POLYMER
COMBINE INCOMPATIBLE

Contact information

Anjeza Kuhar | Sales Manager
English / Italian / Albanian
Phone: +386 40 380 668
anjeza.kuhar(at)graftpolymer.com

Pavel Kobzev | English / Hebrew
Business Development & Sales Director
Phone: +386 40 867 937
Pavel(at)graftpolymer.com

Ekaterina Kulevskaia | Sales Manager
English / Russian / Slovenian
Phone: :+386 31 399 366
ekaterina(at)graftpolymer.com

www.graftpolymer.com

[Info\(at\)graftpolymer.com](mailto:Info(at)graftpolymer.com)