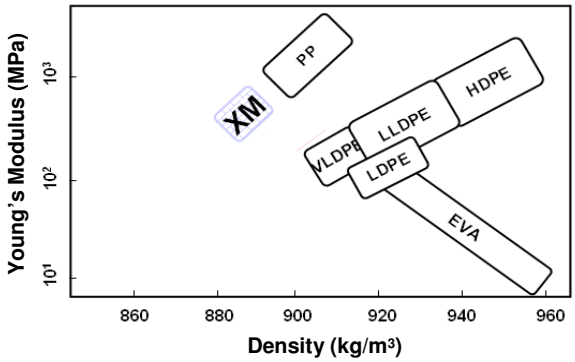
TAFMER™ XM

Propylene based α-olefin copolymer

TAFMER™ XM is used as a modifier of polypropylene (PP) to improve its properties. In high heat resistant non-crosslinked type Halogen Free Flame Retardant (HFFR) compound PP is commonly used as a base resin, however poor elongation and softness are constraint on designed compound.
TAFMER™ XM provides solution to balance elongation, softness, heat resistance and abrasion resistance, which conventional ethylene based elastomer including SEBS can not achieve.

General characteristics attributed to TAFMER™ XM :

- Low Crystallinity and Density
  for high filler containability
- Low Young's Modulus
  for Softness and Flexibility
- Excellent Elongation
- Miscibility with PP
  for maintaining resistance to abrasion



PP HFFR Compound Modification

TAFMER™ XM shows performance superior to SEBS in PP based HFFR compound due to its miscibility with PP. The advantage is demonstrated especially on resistance to abrasion.

The following comparison table proves advantage of TAFMER™ XM to conventional ethylene based elastomers.

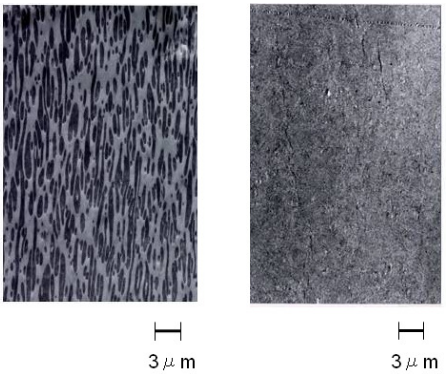
		Modifier			
		None	EBR *2	SEBS *3	XM-5070
PP *1	%	50	30	30	30
Modifier	%	—	20	20	20
MDH *4	%	50	50	50	50
Tensile Strength *5	MPa	23	15	21	22
Elongation at Break *5	%	80	240	400	440
Abrasion Depth *6	mm	0.3	1.8	1.9	0.4

*1: Impact Copolymer
*2: EBR (Ethylene 1-Butene copolymer) : MFR(190 ℃)=0.5 g/10min, Density=861 kg/m³
*3: SEBS : Density=910 kg/m³, Styrene=29 wt%, Shore A=75
*4: Fatty Acid Treated Type
*5: ASTM D638
*6: Depth after scraping 500 cycles by 7 N load on 2mmϕ column sample

Resistance to Abrasion

It is commonly understood that interface between POE and PP matrix causes weak resistance to abrasion.
As demonstrated in the photos, TAFMER™ XM does not show any phase separation, hence, excellent resistance to abrasion is realized in PP compound.

PP / POE = 60 / 40 % **PP / XM = 60 / 40 %**



Summary

TAFMER™ XM

- ☑ Improves softness and flexibility
- ☑ Maintains tensile strength and enhanced elongation
- ☑ Maintains resistance to abrasion

Basic Properties

Physical Properties	Test Method	Unit	XM-7070	XM-7080
MFR(190℃/2.16kg)	ASTM D1238	g/10min	3.0	3.0
MFR(230℃/2.16kg)	ASTM D1238	g/10min	7.0	7.0
Mechanical Properties				
Yielding stress	ASTM D638	MPa	11	14
Tensile Strength at Break	ASTM D638	MPa	34	36
Elongation at Break	ASTM D638	%	750	750
Young's modulus	ASTM D638	MPa	290	390
Surface Hardness (Shore D)	ASTM D2240	–	52	55
Thermal Properties				
Melting Point	MCI Method	℃	75	83

Note: All of the above listed data are representative values, and not specific ones.

FDA

All the monomers and additives used in the above TAFMER™ grade are listed in the "Code of Federal Regulation, title 21 Food and Drugs, Parts 170 to 189" and "FCN (Food Contact Notification)".

EU Directive

All the monomers and additives used in the above TAFMER™ grade are listed in the EU Directive 2002/72/EC and its amendment 2008/39/EC.
The only additives with Specific Migration Limit (SML) are:
n-Octadecyl 3,5-di-t-butyl-4-hydroxy hydrocinnamate (CAS No.2082-79-3, Ref No.68320)
: SML= 6mg/kg

Please ensure that the SML and Overall Migration (OM) are within the specified value in the end-use products,.