NEXPRENE® 9000 TPE

Solvay
Engineered Polymers

SOLVAY

TPE Technology
In Depth

With the NexPrene® 9000 family of materials, Solvay Engineered Polymers offers a series of fully vulcanized thermoplastic elastomers, in which the rubber phase is finely dispersed in a polypropylene matrix. Parts made from NexPrene® 9000 not only look good, they feel good. Fine surface textures in injection molded parts are easily achieved, allowing a surface feel that has never before been available. In addition, NexPrene® 9000 materials display a very white natural color.

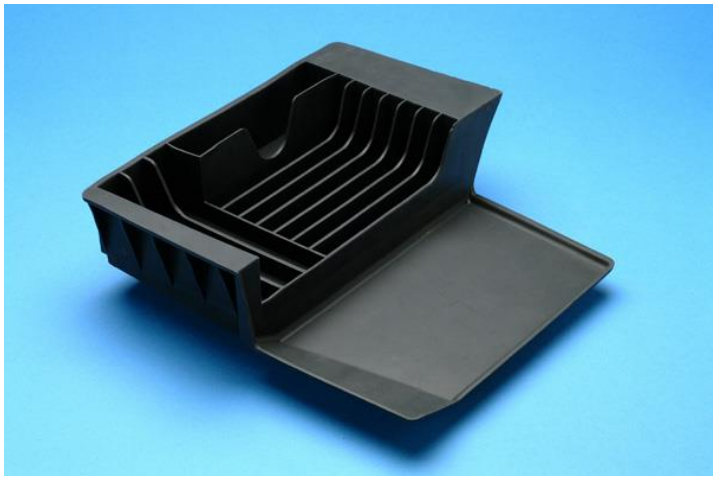
Which advantages has NexPrene® 9000?

- NexPrene® 9000 is not sensitive at all to moisture and does not need to be dried prior to processing.
- A very white natural color, measured by a low yellowness index, makes NexPrene® 9000 easier to colour at the press using far less color concentrate than standard TPE-V. This is why colored NexPrene® 9000 in bright colours has better material properties compared to conventional thermoplastic elastomers.
- NexPrene® 9000 is available from 35 Shore A up to 50 Shore D
- Lower processing temperatures, compared to conventional TPE-V, allows shorter cycle times and lower the overall costs.
- Specialty grades with excellent bonding to polyamide.
- Specialty grades which bond to polystyrene, polycarbonate, EPDM and polyurethanes.
- Lower oil swell with NexPrene® 9000 grades from 35 up to 64 Shore A, compared to conventional TPV.
- Scratch resistant grades (less scratch sensitive than PVC)
- Low odor and low fogging (standard with all grades)
- Glossy grades with low Shore A hardness.
- Wide processing window.
- Low compression set.
- Fully recyclable.

New
Design possibilities

The NexPrene® 9000 series has been developed for optimal *Haptic* and a silky touch. It feels pleasant, without being too rubbery or sticky. Upon request, we can change the coefficient of friction to meet your requirements. This is important for the designer who wants to go into new areas, and this is advantageous when the part has to be fixed. Grain and colour play an important role regarding scratch resistance and should be taken into account when you convert an application to a NexPrene® 9000 material.

UV Stability and
Chemical resistance



Solvay Engineered Polymers was created out of Ciba-Geigy in 1976. Since then we have grown to be the largest supplier of elastomer-modified thermoplastic polyolefins to the automotive industry in North America. We have many years of experience in stabilizing thermoplastic materials against the effects of UV-light, and we are able to cost effectively minimize colour shift in our compounds after three years Arizona weathering. Thermoplastic elastomers from Solvay Engineered Polymers have an excellent resistance to various chemicals, particularly the chemicals that are used in the automotive industry, with the exception of petrol.

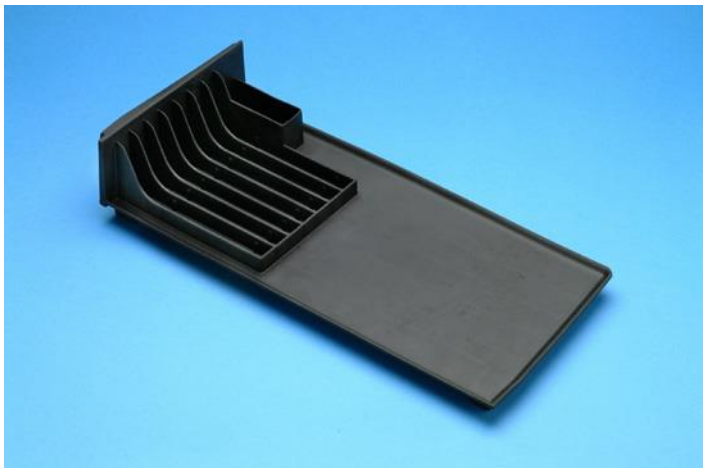
Thermal **Stability**

Although NexPrene® 9000 materials do not have the same physical properties as a typical thermoset rubber, the performance of NexPrene® 9000 grades allow their use in many products. The impact properties at low temperatures (up to -60°C) are one of the advantages of NexPrene® 9000 TPEs. Good surface aspect even at elevated temperatures is often an important requirement when a new part has to be developed. Due to its finely dispersed rubber phase, NexPrene® 9000 grades exhibit improved mechanical properties over styrene-based thermoplastic elastomers. This means that parts made out of NexPrene® 9000 can withstand temperatures up to 125°C for a long time.

Environmental **Care**

NexPrene® 9000 materials are low-emission thermoplastic elastomers with an extremely low tendency for “fogging”. This is accomplished by the use of a proprietary combination of polyolefins and additives in our patented technology. Our “fogging” values have been measured by the use of the photometrical method, to SAE J1756.

For NexPrene® 9000, all values are far above 80%. NexPrene® 9000 has a very low odor, registering below 2.5 when measured according to VDA 270 B.



Wet
Grip

Compared to a typical TPE-S, NexPrene® 9000 materials have a very good grip when wet. When a NexPrene® 9000 surface is wet, it will not feel slippery, as conventional thermoplastic elastomers tend to do. This makes these grades the first material choice for grips, handles, household appliances, consumer goods, and other safety-relevant parts.

Low density –
Low costs

NexPrene® 9000 products can be delivered (upon request) pre-colored. Solvay Engineered Polymers is, in that case, responsible for the color matching and can advise you on the color harmony of the combined parts. The density of NexPrene® 9000 is lower than a typical TPE-S compound, which lowers the cost.

Not only is NexPrene® 9000 a cost effective replacement for many elastomers, additional savings are possible due to the elimination and the expense of premium UV-Stabilizers. The low viscosity also allows a simpler tool design with longer flow distances. The large processing window of NexPrene® 9000 leads generally to lower scrap rates. Due to the fact that NexPrene® 9000 is non-hygroscopic, it is not necessary to dry the material prior to processing. Even NexPrene® 9000 grades that are bondable to polyamide substrates do not need to be dried prior to processing.

NexPrene® 9000
Properties

Properties	Method	Unit	9040A	9045A	9050A	9055A	9060A	9065A	9070A	9075A	9080A	9085A	9040D	9050D
Hardness (inj. molding)	ISO 868	Shore	40 A	46 A	51 A	56 A	60A	64 A	70 A	75 A	80 A	86 A	40 D	50 D
Density (at 23°C)	ISO 1183	g/cm³	0,93	0,92	0,96	0,96	0,96	0,96	0,96	0,96	0,96	0,96	0,97	0,98
Tensile strength	ISO 37 - 1	MPa	2,7	3	3	4	4	5	6	6	9	10	11	16
Elongation at Break	ISO 37 - 1	%	310	310	310	310	400	450	500	500	550	600	650	800
100% Modulus	ISO 37 - 1	MPa	1,8	2	2	2,2	2	3	4	5	6	6,6	8	12
Tear Strength	ISO 34 - B	kN/m	10	11	11	23	21	25	30	40	45	50	65	90
Compression set (after 24h. at 23°C)	ISO 815	%	10	11	11	13	15	17	19	21	23	25	25	41
Compression set (after 70h. at 125°C)	ISO 815	%	36	38	39	39	40	40	46	55	60	63	70	80
Brittle Point	ASTM D746	°C	< -60	< -60	< -60	< -60	< -60	< -60	< -60	< -60	< -55	< -50	< -45	< -40
Oil Volume Swell (after 70h. at 125°C)	ISO 1817 (IRM 903 oil)	%	67	70	70	80	80	80	80	80	80	69	55	52

Test procedure ISO 868 is equivalent to DIN 53505 and test procedure ISO 1183 is equivalent to DIN 53479.
Test procedure ISO 37 is equivalent to DIN 53504 (rate of feed is 500mm/min.)
Test procedure ISO 34 is equivalent to DIN 53515.

Consumer goods,
Sports and Electronics

Sporting goods, household appliances, or consumer goods have to be durable. This means that the requirements for daily use are high, but the eye would like to be indulged also. This is not a problem for NexPrene® 9000 thermoplastic elastomer. This material is easy to process and enables ergonomically and aesthetically designed products. NexPrene® 9000 is easy to color, either opaque or translucent,

with interesting color effects, all to your requirements. In addition, NexPrene® 9000 offers excellent electrical insulation properties. Other grades can be conductive if the application requires this type of performance.

Why **Solvay?**

Solvay materials can be found in automobiles, aircraft, consumer and industrial goods. They include HDPE compounds; performance compounds based on PP, PE, and PVC; PVC resins and – for high performance applications – specialty polymers based on polyarylamide, PVDF and Fluor.

The Solvay family of products offers a unique combination of decorative possibilities and processability properties. They are recommended for such end uses as heat-resistant engine parts, fuel tanks and hoses, airplane interior panels, and artificial leathers, to name just a few. These highly technical applications are found in automotive interiors and exteriors - under the bonnet - in fuel systems, and in the aerospace industry.

You can obtain further information about products from Solvay Engineered Polymers and their applications on our website:

http://www.solvayengineeredpolymers.de

If you have any questions about our lineup of engineered polyolefins, we will be glad to advise you.

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