



# Perfect Driving Comfort

**kim FLEX<sup>®</sup>**  
FLEXIBLE FOAM SYSTEMS



High-Density Sound Insulation System for  
Automotive Industry

## **KIMflex High-Density Sound Insulation System for Automotive Industry**

Today's technological developments have provided great convenience to lives, but with some disadvantages, of which one is noise pollution.

The excessive increase of noise pollution in recent years has raised the need for sound insulation. Having gained importance in many different industries and fields, the sound insulation has become a determining factor in the automotive industry.

Today, internal noise factor plays a significant role in consumer's preference of automotive brand, which has led to increase in inherited competition between automotive companies and required insulation materials to be constantly improved.

Flexible sound insulation foams, designed to achieve sound insulation in the automotive industry, are preferred more than any other insulation materials, due to their open-cell pore structures, lightweight and easy applicability, and contribute to the overall sustainability performance in vehicles.

Sound insulation solutions significantly reduce the noise in vehicles and offer a pleasant driving opportunity for drivers.

**Kimpur**, with an aim to provide a comfortable driving and traveling experience, has developed **KIMflex** High-Intensity Sound Insulation System with superior advantages.

The **KIMflex** system allows sound waves to spread smoothly, thanks to its open-cell surface structure. It shows perfect sound absorption characteristics, reducing the energy of sound waves entering the cells.



### **AREAS OF USAGE**

- | Vehicle floor
- | Peripheral engine components



## ADVANTAGES

- | High sound absorption
- | Proper surface and foam structure
- | Flexibility
- | Excellent flowability even in complex molds
- | High abrasion resistance

KIMflex FC	COMPONENTS		KIMflex FC 049 Izokim FC 017
REACTION PROFILE	UNIT	VALUE	METHOD
Mixing Ratio (Polymix / Isocyanete)	By weight	100 / 40	Kimpur Internal Method
Mixing Time	s	5	Kimpur Internal Method
Cream Time	s	8 ± 2	Kimpur Internal Method
Tack Free Time	s	55 ± 5	Kimpur Internal Method
Rise Time	s	78 ± 5	Kimpur Internal Method
Demolding Time	s	180	Kimpur Internal Method
Free Rise Density	kg / m <sup>3</sup>	52 ± 3	Kimpur Internal Method

## Graphene Based High Performance KIMflex Sound Insulation Systems

Light vehicle design has gained major importance in the automotive industry in order to save energy. With composite parts used in new generation vehicles, fuel consumption is reduced by making the vehicle lighter.

Hence, it is known that polyurethane systems, with their lightness feature, provide loss of weight in vehicles and create less emissions with less use of energy. Therefore, polyurethane systems are frequently preferred in the automotive industry, from vehicle seat production to sound insulation.

Graphene, being defined as the miracle material of recent years, has further strengthened this feature of polyurethane foam. Thanks to their lightness, graphene-based polyurethane foams increase the performance of sound insulation without affecting the total weight of the car. As a result of studies performed, it has been determined that graphene-based sound insulation systems provide **up to %65** improvement in sound absorption compared to standard systems.

Compared to standard systems, improvements in the mechanical properties of sound insulation systems obtained with the use of graphene have been observed, and the test results are given in Table 1.

Test	Standard Sound Insulation Systems	Graphene-Based Insulation Systems	Improvement Rate
Comfort Coefficient (SAG)	3,57	4,42	%23,80
Tear Resistance ( $F_{break}$ N/cm <sup>2</sup> )	6,21	7,2	%15,94
Tensile Strength (εR)	180	193,67	%7,59
Permanent Deformation (%)	20	16	%20
<b>Sound Absorption Coefficient</b> *1/3 Octave Band Frequency (Hz)			
500	0,08	0,09	%12,5
630	0,10	0,12	%20
800	0,12	0,16	%33,3
1000	0,17	0,21	%23,5
1250	0,26	0,28	%7,7
1600	0,30	0,39	%30
2000	0,32	0,53	%65,6
2500	0,43	0,71	%65,1
3150	0,60	0,87	%45
4000	0,75	0,93	%24
5000	0,82	0,87	%6,1
6300	0,80	0,80	

Table 1: Comparison of Test Results of Graphene-Based Sound Insulation Systems and Standard Sound Insulation Systems

\* Tests were performed at an operating ratio of 100/64 and a molded density of 39 kg/m<sup>3</sup>.



Applying graphene which is obtained from the recycling of automotive tire wastes, **Kimpur** developed high performance **KIMflex** HR Foam Systems used in the production of office and automotive seats.

KIMflex FC	COMPONENTS		KIMflex FC 049 Izokim FC 017
REACTION PROFILE	UNIT	VALUE	METHOD
Mixing Ratio (Polymix / Isocyanete)	By weight	100/66	KIMPUR Internal Method
Mixing Time	sec	5	KIMPUR Internal Method
Cream Time	sec	8±1	KIMPUR Internal Method
Tack Free Time	sec	40±4	KIMPUR Internal Method
Rise Time	sec	60±5	KIMPUR Internal Method
Free Rise Density	kg/m³	38±2	KIMPUR Internal Method

For more detailed information on products, TDS and MSDS documents, you may contact our sales office.

# THE POLYURETHANE SYSTEM HOUSE OF TURKEY



PRODUCTION CAPACITY  
**129.000**  
**TONS**  
IN TURKEY

PRODUCTION CAPACITY  
**25.000**  
**TONS**  
IN EUROPE



**Kimpur Means Mutual Trust and Cooperation**



**Kimpur Means Quality**



**Kimpur Means Fast Approach to Market Challenges**



**Kimpur Means Strong Communication Networks with Its All Stakeholders**



**Kimpur is an Innovator and Solution Provider**



**Kimpur Means Experience**



**Kimpur is Sensible to The Environment**



**Kimpur is a Leading and Technology-Oriented Company**



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#### KIMTEKS POLİÜRETAN SANAYİ VE TİCARET A.Ş.

##### HEAD OFFICE :

Emniyet Evleri Mah. Eski Büyükdere Cad.  
Sapphire Plaza No:1/4 Kat: 19 D:01  
Kağıthane 34415 İstanbul TÜRKİYE

Phone: +90 212 809 15 50

Fax : +90 212 809 15 49

##### GEBZE FACTORY :

Gebze Plastikçiler Organize  
San. Bölgesi 7. Cadde No:43  
41400 Gebze Kocaeli TÜRKİYE

Phone: +90 262 751 44 71

Fax : +90 262 751 02 57

##### GAZİANTEP :

Sanayi Mah. Modern Sanayi Sitesi  
60363 Nolu Cad. Zemin Kat No: 82  
Şehitkamil Gaziantep TÜRKİYE

Phone: +90 342 325 57 97

Fax : +90 342 325 57 97