

# MATERIAL SOLUTIONS FOR PROTECTIVE CASES IN ELECTRONICS

Personal hand held electronic devices like mobile phones, phablets and wireless devices are common accessories in today’s Internet of Things’ world. As these portable electronic devices become more elegant, sleek and expensive, the need to protect it to preserve its look and value becomes a necessity.

Protective cases and covers come in a variety of designs, forms and functions. Clear transparent or opaque colored plastic are typical materials used for protective cases. If not formulated correctly, these materials may not be able to withstand the abuse of a typical consumer usage.

This paper shares with you the different protective casing design trends and the materials that can be used for different applications.

DESIGN NEEDS	COVER TYPE				
	Clear (thin wall)	Clear View	View Window	Opaque	Leather
2 <sup>ND</sup> OPERATION		NON-CONDUCTIVE VACUUM METALLIZATION	UV	FILM LAMINATION OR UV	LEATHER BONDING
MATERIAL SOLUTIONS	LEXAN™ HFD1930	LEXAN EXL1613T	LEXAN EXL1414T	LEXAN ML0991	LEXAN EXL1413T
HIGH TRANSMITTANCE	**	*	*		*
LOW HAZE	**	*	*		*
HIGH NOTCHED IZOD IMPACT		***	**	*	*
CHEMICAL RESISTANCE		**	*	*	*
HIGH FLOW	**			*	

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## CLEAR

This is the simplest design and form of a protective case. This design can protect the back and sides of the portable device with little protection to the front glass panel. This design is typically basic and lightweight due to the minimal use of material in the cover. The challenge is to be able to produce the cover in very thin-walled sections of less than 1mm while maintaining reasonably good resistance against drop cracking. This can be achieved using LEXAN™ HFD1930 resin. This resin enables very thin walled covers to be produced and can be custom colored from light to dark colors.

## CLEAR VIEW

This design provides a metallic look on the front cover with a reflective mirror while allowing visibility of the display. This is achieved using a secondary process called Non-Conductive Vacuum Metallization (NCVM). LEXAN EXL1613T is designed to survive this stringent NCVM process and provide the best level of chemical resistance and impact performance for transparent protective cases.

## VIEW WINDOW

This design provides cover protection on both the front and back of the portable device. The front cover has a clear transparent window to enable consumers to view the time or other critical information on the screen. This design typically requires a good balance of impact resistance and chemical resistance against typical chemicals found on human hands and face such as hand cream, sunscreen and facial lotion. LEXAN EXL1414T can provide this good balance of protection and good surface aesthetics.

## OPAQUE

This design is similar to clear covers except the transparency is compromised for an opaque colored design or with design prints on the back to satisfy the consumer's aesthetic preference. The need for printing or lamination requires a material with improved chemical resistance and UV resistance. For this purpose, the LEXAN ML0991 is the material of choice.

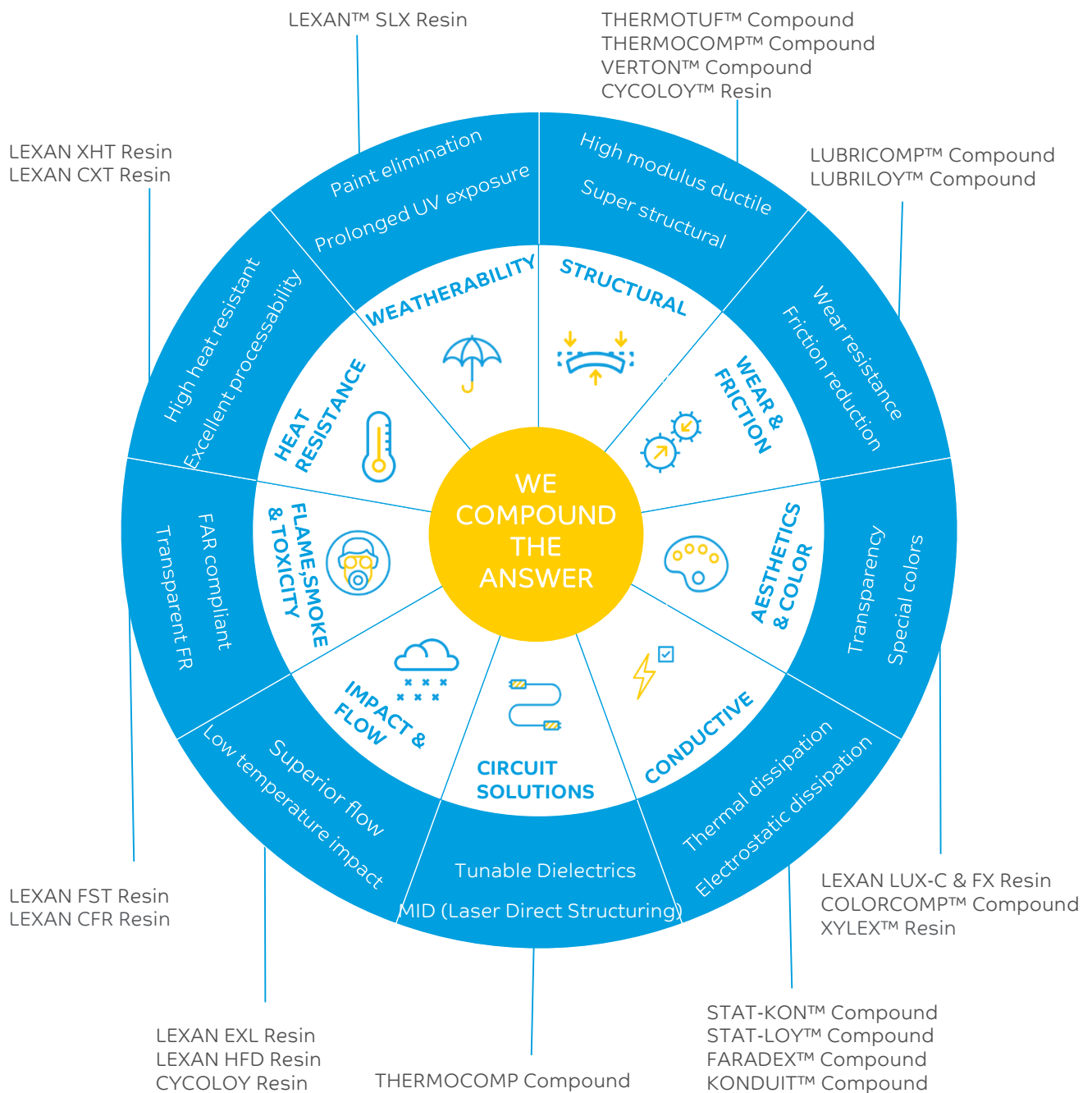
## LEATHER

This design provides a more classy leather feel and look and the protective case is bonded to leather. The bonding is done by adhesive and as a result, a material with good chemical resistance is preferred. LEXAN EXL1413T will provide a good solution for this design requirement.

SABIC Specialty Resins can address each of the above design needs to help customers speed up their process of commercialization of protective cases for portable electronics.

# SPECIALTY COMPOUNDS & LEXAN™ COPOLYMER RESINS

Over 50 years of innovation in thermoplastic compounding enables SABIC's specialty compounds to offer extensive materials with a broad portfolio.



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