

Gel-Cast™ Cartridgeable Polyurethane Elastomers

1. Introduction

The Gel-Cast™ Cartridgeable Polyurethane Elastomers react to form clear, flexible polyurethane elastomers of hardnesses from 5 through to 30 Shore A.

This is a development product and therefore information about the behaviour and properties of the components and the cured product is limited. A full technical datasheet will be prepared in due course.

2. Applications

Gel-Cast™ Cartridgeable PU elastomers have been formulated for casting components with a soft “feel”, and also for applications where a soft product is necessary such as handgrips, seals and encapsulants. These products also find application as synthetic skin effect compounds and pad materials in equine applications.

The Gel-Cast™ Cartridgeable range is also available in hand-casting form for alternative applications. Please refer to the Gel-Cast™ datasheet for further details.

3. Specification

Property		All Hardness Grades		Units	
		Min.	Max.		
Gel Time (35g @ 20°C)	Min.	75		Seconds	
	Max.	125			
Demould Time (35g @ 20°C)	Min.	3		Minutes	
	Max.	6			
Full Cure (35g @ 20°C)	Min.	24		Hours	
	Max.	48			
		Min.	Max.		
Hardness at full cure	Gel-Cast 5	Min.	3	7	Shore A
	Gel-Cast 10	Min.	8	12	
	Gel-Cast 15	Min.	13	17	
	Gel-Cast 20	Min.	18	22	
	Gel-Cast 25	Min.	13	27	
	Gel-Cast 30	Min.	18	32	

4. Mix Ratios (all Grades)

By Weight: 0.96 Parts Part A to 1.00 part Part B

By Volume: 1.00 Parts Part A to 1.00 part Part B

If not used in the standard cartridge pack supplied the components should be measured to an accuracy of 2% or better. Care should be taking when measuring by volume as this is an inherently inaccurate method unless specific volumetric measuring equipment is used.

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Technical Data Sheet

5. Typical Properties

Property	All Hardness Grades	Units
Gel Time (35g @ 20°C)	90	Seconds
Demould Time (35g @ 20°C)	5	Minutes
Full Cure (35g @ 20°C)	36	Hours

Hardness at full cure	Gel-Cast 5	5	Shore A
	Gel-Cast 10	10	
	Gel-Cast 15	15	
	Gel-Cast 20	20	
	Gel-Cast 25	25	
	Gel-Cast 30	30	

6. Preparation of Components

None of the components require preparation other than mixing prior to removal of any product from the containers.

The components may be mixed and cast at room temperature and require no pre-warming prior to use. If the mould needs to be pre-warmed details will be given in the PREPARATION OF MOULDS section. If the product requires a postcure details will be given in the METHOD OF USE section.

7. Preparation of Moulds

Moulds should be clean and dry and generally a good quality release agent should be used and allowed to dry fully. For details of suitable release agents please contact Adhesive Brokers Limited.

Moulds should require no pre-warming, though if ambient conditions are particularly cold then warming to a temperature of 15-25°C will assist the cure of the material and avoid differential shrinkage between the core and the edges of the moulding. Be aware that cold temperatures will result in longer cure and demould times.

In addition metal moulds should be warmed to 20-30°C to avoid chilling the polyurethane in contact with the mould surface, as this will result in extended demould time and may cause differential shrinkage, and surface defect problems.

8. Method of Use

1. Place cartridge into gun and remove nose-plug.
2. Expel a small amount of material to waste in order to align the pistons and ensure that the two components are expelled together.
3. Attach mixer
4. Expel product from cartridge using smooth, steady depressions of the gun.
5. Allow to cure.

The components should be mixed together thoroughly by hand use a flat blade such as a palette knife or with a Jiffy type mixer if using a drill. The mixing should be carried out with care to avoid the inclusion of air and also to ensure that material on the sides and bottom of the vessel is removed and mixed in.

To avoid patches of unmixed components in the finished product the mixed material may then be transferred to a second container and mixed again.

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Technical Data Sheet

Pouring

Care during pouring is essential to avoid entrapped air. Allow the material to flow gently over the mould surface and to fill cavities and channels from the bottom up.

Postcure

The Gel-Cast™ Cartridgeable products cure satisfactorily at ambient temperature, however a short postcure for, say, 2 hours at 70°C will reduce the time to full cure and ensure that the maximum physical properties are obtained.

9. Handling and Storage

The relevant Safety Data Sheets should be read carefully before using this material. Good housekeeping is important with this material as with all chemicals. Spillages should be wiped up immediately and containers wiped clean after use. Isocyanate spillages can be especially hazardous and the Safety Data Sheet should be consulted for the correct cleaning up procedure.

Both components will absorb moisture, which will detract from obtaining satisfactory product. Exposure to atmosphere should therefore be minimised and containers sealed as soon as possible after use. Ideally part-used containers should be purged with dry nitrogen before resealing.

The components should be stored in their original containers in a dry place at 5-25°C. Both components have a minimum shelf life of 12 months from the date of manufacture when stored correctly in unopened containers.

10. Health and Safety

The Safety Data Sheets provide information on the health and safety aspects of these materials. Please contact Atlas Polymers if you do not have the necessary Safety Data Sheets.

The Gel-Cast™ Cartridgeable Part A components are not classified according to the requirements of the CHIP regulations. However care should be taken to avoid direct contact and gloves, goggles and impervious overalls should be worn.

The Part B isocyanate is classified as HARMFUL by inhalation. In addition it may cause sensitisation by inhalation and skin contact and is classified as IRRITANT to eyes, respiratory system and skin. At room temperature the vapour hazard is low but care should be taken not to allow vapours to accumulate. This is especially likely if the product is heated. Avoid direct contact with skin and eyes by means of gloves, goggles and impervious overalls.

11. Suitability for Use

The information in this datasheet is given to the best of our knowledge and belief but without warranty or liability. The user must establish the suitability of the material for the intended application by carrying out any appropriate tests. Finished products produced from any batch of our materials must be subjected to comprehensive standards of quality control by the user.

12. Additional Information

Please note that this is a development material and as such the amount of information regarding this product is limited. The product has not been tested for all applications and it is strongly recommended that customers carry out adequate trials to determine the suitability of this material for the intended use.

No liability will be accepted for direct or consequential losses arising from the use of this material.

However any comments or suggestions relating to improving the processing or characteristics of this material will be very welcome.