

## DR131 Crystal-Cast Rigid (for thick sections)

### 1. Introduction

DR131 reacts with Part B to form a water-white, clear, impact resistant rigid polyurethane.

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

DR131 has been formulated for use in casting thick sections (5-75mm) where a high degree of clarity and low colour is required. In addition the long pot life of the mixed system allows it to be fully degassed and poured carefully producing substantially bubble-free castings.

PLEASE NOTE: This product becomes very warm during cure. Ensure moulds are made of a suitable material to withstand this temperature. If in doubt please contact Adhesive Brokers Limited.

### 3. Specification

Property	Minimum	Maximum	Units
Gel Time (100g 20°C)	25	40	Minutes
Demould Time (100g 20°C)	1	2	Hours
Full Cure (100g 20°C)	20	30	Hours
Hardness at full cure	80	90	Shore D

### 4. Mix Ratios

By Weight: 1.00 parts DR131 to 1.00 parts Part B

By Volume: 1.03 parts DR131 to 1.00 parts Part B

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.

**Atlas Polymers Limited**  
Technical Data Sheet

---

**5. Typical Properties**

Property		Typical Value	Units
Colour	Part A	Water clear	-
	Part B	Water Clear	-
	Mixed	Water Clear	-
S.G.	Part A	1.05	-
	Part B	1.07	-
	Mixed	1.06 -1.10	-
Gel Time (100g 20°C)		28	Minutes
Demould Time (100g 20°C)		1.5	Hours
Full Cure (100g 20°C)		24	Hours
Hardness at full cure		85	Shore D

**6. Preparation of Components**

Neither component requires 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 Atlas Polymers.

Moulds should require no pre-warming, though if ambient conditions are particularly cold then warming to a temperature of 15-20°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**

### **Weighing**

The components should be weighed on equipment capable of an accuracy of  $\pm 2\%$  or better. The larger quantity (usually polyol or resin component) should be weighed into a vessel of sufficient capacity to accommodate the entire mix and allow room for mixing, and degassing if required.

All components should be weighed directly into the one vessel. Do not weigh each component into a separate vessel and then combine them, as this will not give the desired mix ratio due to losses and wastage in each container. In turn this will lead to cure problems such as incorrect cure time or hardness.

### **Mixing**

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.

### **Degassing**

If degassing is required it should be done immediately after mixing. It is important to remember that degassing is only possible if the material has a sufficiently long pot life or gel time to allow for mixing, degassing and pouring.

The degassing chamber should be large enough to accommodate the mixing vessel and the vacuum pump should ideally be able to create sufficient vacuum in the chamber to start degassing within one minute. Once the violent bubbling ceases degassing is complete for most applications. Further degassing removes only a tiny proportion of air and is only necessary in critical applications.

Please note that increasing the quantity of mix or working at higher ambient temperatures (eg. in the summer) can reduce the pot life of the material. Where possible trials should be carried out to establish these parameters.

### **Pouring**

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

Take care not to scrape the sides of the mixing vessel to remove the last of the product. This very frequently results in an undercured or soft area in the finished casting.

### **Postcure**

This material will cure satisfactorily at ambient temperatures. Whilst the material can be demoulded with care after 1 hour, full strength and hardness will develop after 24 hours.

Postcuring the material for 2-3 hours at 40-50°C will improve the physical properties and will reduce the time to full cure. This is best carried out in the mould.

## **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 Sheet provides information on the health and safety aspects of this material. Please contact Atlas Polymers if you do not have a Safety Data Sheet for each of the components of this material.

The DR131 Part A component is 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 TOXIC 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 significant and 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.