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HUNTSMAN
Enriching lives through innovation

Advanced Materials

RenCast® 264-1 / Ren® HY 956 or Aradur® HY 2954 or Hardener 234 *

ALUMINIUM FILLED CASTING EPOXY SYSTEM AVAILABLE IN A RANGE OF REACTIVITIES DEPENDING ON CHOICE OF HARDENER

Key properties

- Suitable for full or face castings
- Cure rate determined by choice of hardener
- Choice of hardener can provide operating temperatures up to 150°C
- Excellent heat transfer
- Readily pourable
- Readily machinable when cured

Applications

- Construction of foundry patterns for prototypes and short runs
- structural foam moulds
- vacuum forming moulds
- Copy-milling models
- Suitable for a wide range of applications

Product data

Property	Unit	RenCast 246-1	Ren HY 956	Hardener 234	Aradur HY 2954
Appearance Colour	Visual	Aluminum grey paste	Clear yellow liquid	Clear yellow liquid	Clear pale yellow liquid
Viscosity at 25°C (ISO 2555)	mPa.s	120 000-180 000	340 - 470	700 -1200	90 - 150
Density	g/cm^3	1.80 -1.90	1.00 -1.05	1.00-1.05	0.93-0.96

In addition to the brand name product denomination may show different appendices, which allows us to differentiate between our production sites, e.g, BD = Germany, US = United States, IN = India.Ct = China, etc.. These appendices are in use on packaging, transport and invoicing documents. Generally the same specifications apply for all versions. Please address any additional need for clarification to the appropriate Huntsman contact.

Processing

Mixing ratio		Parts by weight	
RenCast 246-1	100	100	100
Ren HY 956	10		
Hardener 234		12.5	
Aradur HY2954			13
Recommended maximum operating temperature	60 °C	110 °C	150°C
Initial mixed viscosity at 25°C {mPa.s]	18,000-23,000	6,000-10,000	5,000-9,000
Usable life of 1kg mixture [minute]	40-50	60-80	360-480
Demouidable at 25°C after [hour]	12-18	18-24	24-48
Recommended Post curing schedule	2 days at 25°C or 14hours at 40°C	24 hrs at 25°C + 14hrs at 120°C	16 hrs at 25°C + 4 hrs at 70°C + 4 hrs at 150°C

Mould preparation

Non -porous moulds made of Araldite®, metal, glass, etc... need 2 or 3 coats of Mould Release QZ5111 (Huntsman Advanced Materials). When the last coat of QZ5111 has dried it can be polished with a woollen or cotton cloth. Porous surfaces such as bare timber, plaster etc must be appropriately sealed before the release agent is applied.

Gel coating

RenCast 264-1 contains heavy fillers, which tend to settle over time. We recommend that before partial use the resin be stirred carefully or that each container be used as a complete unit.

Mix the two components thoroughly in the ratio indicated. Avoid excessive aeration during mixing.

If fine details are to be reproduced, a thin layer of resin/hardener mix should be applied to the mould surface with a short-bristle brush before casting. The addition of 5-10% of Thixotropic Agent DT 5039 (Huntsman Advanced Materials) will prevent resin run off in moulds with steep sides. The casting mix should be applied BEFORE this layer has become tack-free.

Casting

The resin/hardener mix should be poured slowly down a mould wail or spatula into the lowest point of the mould. This will help to minimise entrapment of air.

Thick castings can be achieved by pouring successive layers providing that the initial layer is allowed to gel prior to pouring the next layer. Take care that the layer onto which fresh material is being poured is still in the gel stage and has not cured.

Evacuated material will improve properties. Post-curing will improve final properties.

An alternative method is to make up a backing mix of the resin/hardener and aluminium granules, available from **Huntsman Advanced Materials.**

Backing

After gel coat has reached tack free state, but before it has cured, another coating of the same mix is brushed over the surface to act as a coupling coat, and to prevent air pockets from forming directly behind the gel coat,

The backing mix is tamped into position immediately after coating with the coupling mix. Backing mix consists of RenCast® 264-1 with the addition of Aluminium Granules.

RenCast 264-1	100	pbw
Corresponding Hardener		
eg: Hardener 234 Cl	12.5	pbw
Aluminium Granules	100 - 200	pbw

NOTE: 200 parts by weight Aluminium Granules, when tamped gives a porous backing ideal for vacuum forming.

Curing

Where postcuring is required, the temperature should be raised gradually by 20~30°C/hr to avoid creating internal stresses or inducing warpage. Cooling should be carried out slowly, preferably in the closed, switched off oven.

The curing cycles and Deflection Temperatures quoted in this publication are from laboratory trials on standard test pieces and should be used as a guide only. In practice curing of a part is determined by a number of variables eg size, shape and construction.

It is up to the user to determine a curing cycle best suited for his/her process, however the following steps may be used as a starting point.

- Gel at room temperature. This is essential for large parts and when using Mould Release QZ 5111.
- Process for 2-6 hours at half final cure temperature.
- Process for 2-6 hours at final cure temperature.

NOTE: Final cure temperatures should be at least equal to required maximum service temperature of part.

Properties

Property	Test method	Unit	RenCast 264-1 Ren HY 956	RenCast 264-1 Hardener 234	RenCast 264-1 Aradur HY 2954
Deflection temperature under load	ISO 75: 2004	°C	50-60	100-110	140-150
Density	DIN 55990	g/cm^3	1.65 - 1.75	1.65 - 1.75	1.60 - 1.70
Hardness	ISO 868:1978	Shore D	85-90	85 - 90	85-90
Compressive strength	ISO604:1985	MPa	95-105	120-140	115-125
E. Modulus in compression	ISO 604: 1985	MPa	$2.5\text{-}3.0x10^3$	$5.0\text{-}5.5X10^3$	$5.5\text{-}6.5x10^3$
Flexural strength	ISO 178: 2001	MPa	45-50	65-75	65-75
E. Modulus in flexure	ISO 178: 2001	MPa	$2.2\text{-}2.3x10^4$	$3.0\text{-}4.5x10^4$	$3.5\text{-}5.0x10^4$
Linear shrinkage		%	0.04-0.08	0.02-0.06	0.02-0.06
Coefficient of linear thermal expansion .	ISO 11359-2: 1999	ppm/K	16-24	16-24	16-24
Thermal conductivity	ISO8894:1990	W/m.K	0.6-0.7	0.6-0.7	0.6-0.7

Storage

Provided that the components are stored in a dry place in their original, properly closed containers at the above mentioned storage temperatures they will have the shelf lives indicated on the labels.
Partly emptied containers should be closed immediately after use.

For information on waste disposal and hazardous products of decomposition in the event of fire, refer to the Material Safety Data Sheets (MSDS) for these particular products.

Working Conditions

For better control on the thermal reaction and consistency during processing and curing, the products should be used when in the temperature range 18-25°C, then follow the recommended post curing as above.

Handling Precautions

Caution

Our products are generally quite harmless to handle provided that certain precautions normally taken when handling chemicals are observed. The uncured materials must not, for instance, be allowed to come into contact with foodstuffs or food utensils, and measures should be taken to prevent the uncured materials from coming in contact with the skin, since people with particularly sensitive skin may be affected. The wearing of impervious rubber or plastic gloves will normally be necessary; likewise the use of eye protection. The skin should be thoroughly cleansed at the end of each working period by washing with soap and warm water. The use of solvents is to be avoided. Disposable paper - not cloth towels - should be used to dry the skin. Adequate ventilation of the working area is recommended, These precautions are described in greater detail in the Material Safety Data sheets for the individual products and should be referred to for fuller information.

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