

Advanced Materials**RenPaste™ SV 4503-1 with Ren® HV 4503-1**

MODELLING PASTE
MACHINE APPLIED, MEDIUM DENSITY, BROWN EPOXY PASTE

KEY PROPERTIES

- Quick model build up via high output automated equipment
- 40mm thickness layer in one single application
- Low levels of exothermic
- Virtually odourless during application and cutting
- Room temperature curing, machinable after 1 day
- Easily machined formulation, producing a fine, seamless surface
- Superior dimensional stability

APPLICATIONS

- Production of models and moulds

PRODUCT DATA

Property	Unit	RenPaste™ SV 4503-1	Ren® HV 4503-1
Appearance Colour	visual	Paste Brown	Paste White
Density at 23°C (ISO1183-3)	g/cm ³	0.75 [0+/-0.05] **	0.75 [0+/-0.05] **

***Specified data are on a regular basis analysed. Data which is described in this document as 'typical' is not analysed on a regular basis and is given for information purposes only. Data values are not guaranteed or warranted unless if specifically mentioned.*

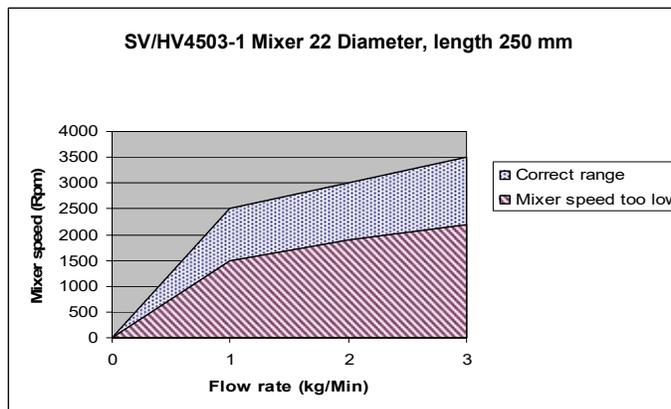
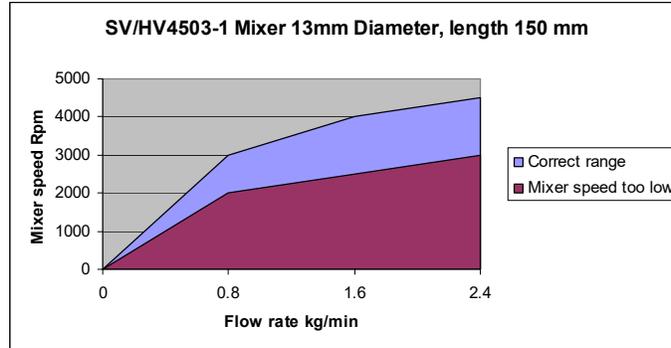
TYPICAL SYSTEM DATA**PROCESSING**

Mix ratio	Parts by weight	Parts by volume
RenPaste™ SV 4503-1	100	100
Ren® HV 4503-1	100	100

- It is strongly recommended to apply the paste using a pumping/ dosing machine equipped with screw pumps and a dynamic mixer head. It has been found that static type mixers may not give a homogenous mix quality.
- Apply paste as a single layer up to 40mm in thickness onto a clean, stable substrate (typically 30kg/m³ expanded polystyrene).
- Allow to cure for at least 24 hours at room temperature before machining.
For further guidelines, refer to the RenPaste™ Seamless Modelling Paste application literature.

DYNAMIC MIXER SPEED

SV/HV 4503-1 is designed to be used with a dynamic type mixer (rotary mixer element). In addition, the rheology (dynamic viscosity) of the product may be altered by regulation of the mixer speed. In order to have a fully mixed paste free from application problems, it is recommended to regulate the mixer within certain limits. The exact speed required will depend on the mixer length, diameter and the flow rate of the paste through the mixer.



TYPICAL PROPERTIES

Resin/Hardener mix:	Volume	Unit	SV / HV 4503-1
Appearance			Brown
Pot life at 25°C	1000 ml	min	15
Max. Layer thickness		mm	40
Machinable after		day	1-2

After cure: 3 days @ Room Temperature (8 Hours @ 65°C)

Density	ISO 1183	g/cm ³	0.75 [0+/-0.03]
Hardness	ISO 868	Shore D	55 - 60
Coefficient of thermal expansion	ISO 11359	10 ⁻⁶ k ⁻¹	100 (105)
Deflection temperature	ISO 75/Tg	°C	45 (55)
Compressive strength	ISO 604	MPa	11.5 (15)
Compressive modulus	ISO 604	MPa	550 (630)
Flexural strength	ISO 178	MPa	11 (12)
Linear shrinkage*		mm/m	1

*Test sample 1000 x 60 x 40mm, released.

CURE SCHEDULE**Cure**

Following application, the material should be allowed to cure at ambient temperature (20-28°C) for a minimum of 24 hours. If the workshop temperature drops below 20°C, this period should be extended to several days. It is not recommended to work at temperatures below 16°C.

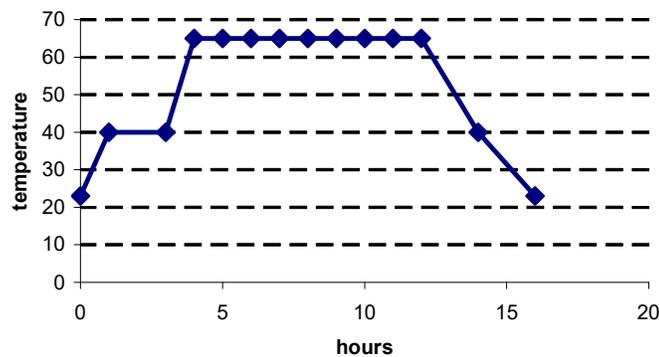
Post Cure

The cured paste may be subjected to a post cure in order to increase the material's temperature resistance.

Post cure should be carried out before milling of the paste to its final dimensions. However, a rough milling may be used before the post cure in order to remove excess material and obtain a uniform thickness. Having a uniform thickness over the part helps to prevent generation of stress and related distortion in the final part during the post cure process.

To achieve the maximum Tg the following is recommended.

Heat from room temperature to 40°C and hold for 2 hours then heat to 65°C and hold for 8 hours. Then cooling should be done in a controlled manner back to room temperature – it should not just be removed from the oven but cooled slowly over around 4 hours to prevent stresses.

Post cure regime**STORAGE**

Provided that RenPaste™ SV 4503-1 and Ren® HV 4503-1 are stored in a dry place in their original, properly closed containers at the storage temperatures mentioned in the MSDS they will have the shelf lives indicated on the labels. Partly emptied containers should be closed immediately after use.

In general Seamless Modeling Pastes should be processed at a minimum temperature of 18°C. Be aware that during winter time it is necessary to store the material at least for one week at 18-20°C before use to assure a complete similar material temperature!

PACKAGING

System	RenPaste™ SV 4503-1	Ren® HV 4503-1
Pack size (kg)	32 120	32 120

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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