

Voltabas 0307 toolbox Impregnating Resin

Thermal class 180

Technical Data Sheet



Chemical Base

Unsaturated polyester resin, epoxy-modified, low emission



Product Description

The Voltabas 0307 toolbox enables the end user to design his own, tailor-made impregnating resin by mixing a selection of pre-formulated semi-finished components. Inside the tolerances given by Axalta Coating Systems the resin components can be mixed individually in different ratios in order to meet various customer requirements.

Voltabas 0307 is compliant with:

- Regulation (EC) No 1907/2006 (REACH)
 - including Annex XIV (SVHC's, PBT/vPvB)
 - including Annex XVII and Regulation (EU) No 2017/1000 (PFOA)
- Directive 2011/65/EU (RoHS)
- Regulation (EU) 2019/1021 (persistent organic pollutants)



Characteristics

- individually adjustable viscosity, reactivity and flow-behaviour / thixotropy
- free of styrene and vinyltoluene
- low emission
- very low crack tendency
- no risk of fire and explosion hazards
- no dangerous good in acc. with ADR (street), RID (rail), IMDG (sea) and IATA (air) transport regulations

The cured resin compound is characterized by:

- high thermal resistance
- good mechanical strength
- good resistance to solvent gases



Typical Applications

- transformers
- electric motors and large drives
- generators



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Mixing Ratio

The Voltabas 0307 toolbox is supplied in components:

- | | |
|---------------------|-----------------------------|
| • Voltabas 0307 | base resin, non-thixotropic |
| • Voltabas 0307 TX | base resin, thixotropic |
| • Voltabas A307 TX+ | thixotropy enhancer |
| • Voltatex® T034 | reactive thinner |
| • Voltatex® T035 | reactive thinner, flexible |
| • Voltatex® H140 | reactivity enhancer |

Typical Mixtures (example):

High film build:

- | | |
|---------------------|-----------------------|
| • Voltabas 0307 TX | 100 parts (by weight) |
| • Voltabas A307 TX+ | 5 parts (by weight) |
| • Voltatex® H140 | 0.4 parts (by weight) |

Based on the Voltabas 0307, the components can be added in the following quantities:

- | | |
|----------------------|-----------------|
| • Voltabas 0307 TX | add up to 100 % |
| • Voltabas A0307 TX+ | add up to 10 % |
| • Voltatex® T034 | add up to 30 % |
| • Voltatex® T035 | add up to 20 % |
| • Voltatex® H140 | add up to 0.8 % |

As we cannot foresee and mention all possible designs and applications in this Data Sheet, please get in contact with our technical service team for further advice and support if appropriate, such as trials in our technical laboratory as well as our expertise to equipment design and production scale-up. Please see the contact details on the last page.

Please review the diagrams on the following pages also.

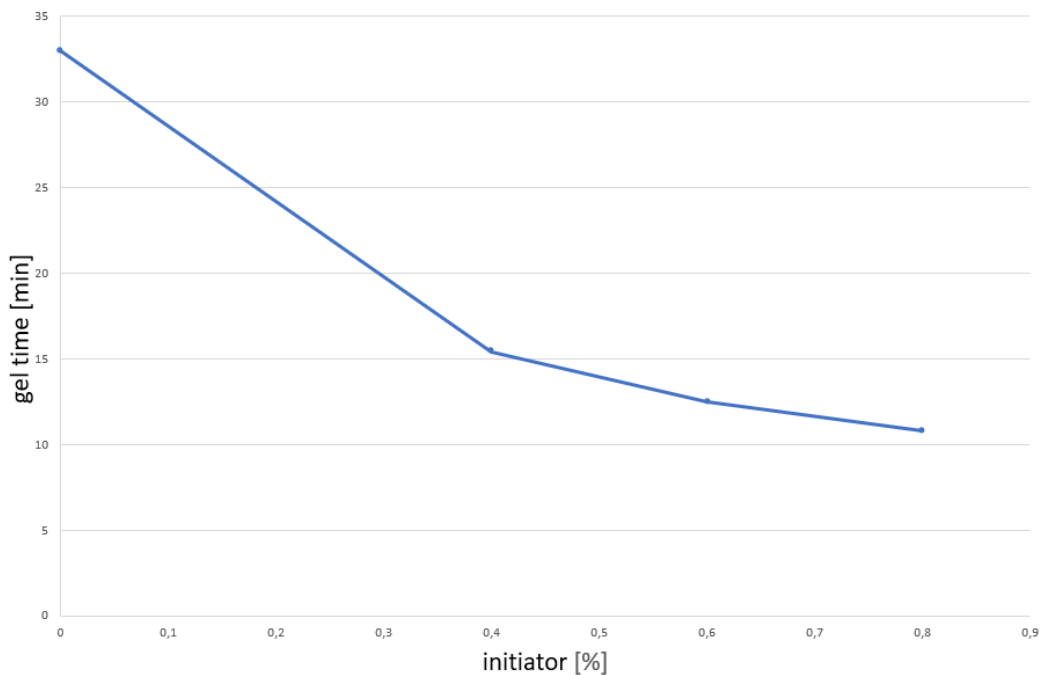


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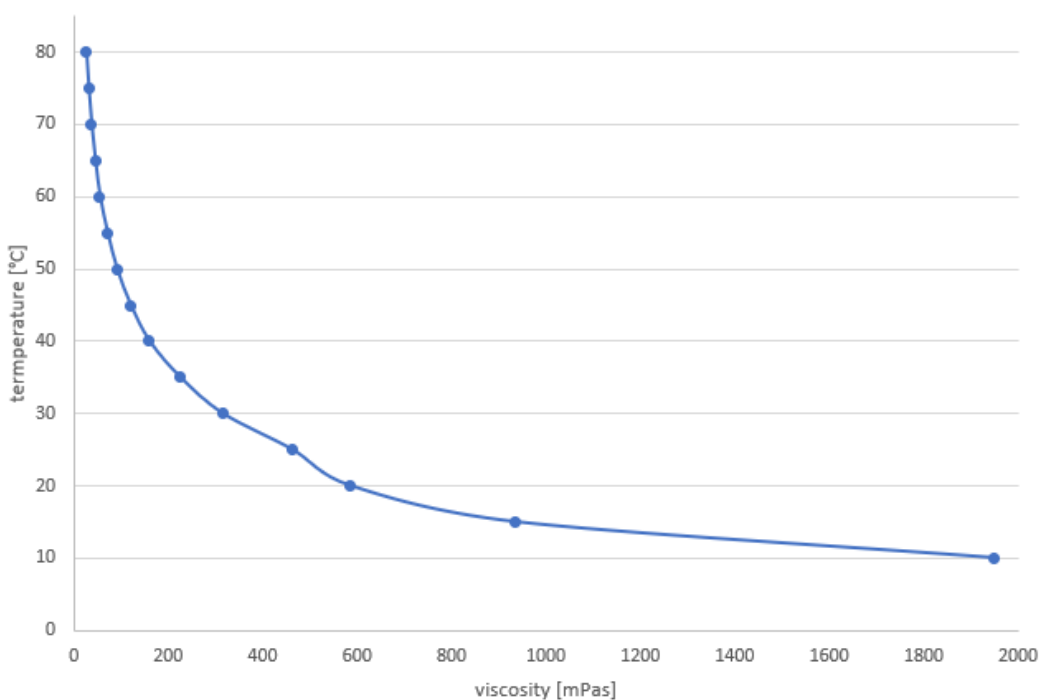
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Gel Time Tolerances



Viscosity Tolerances

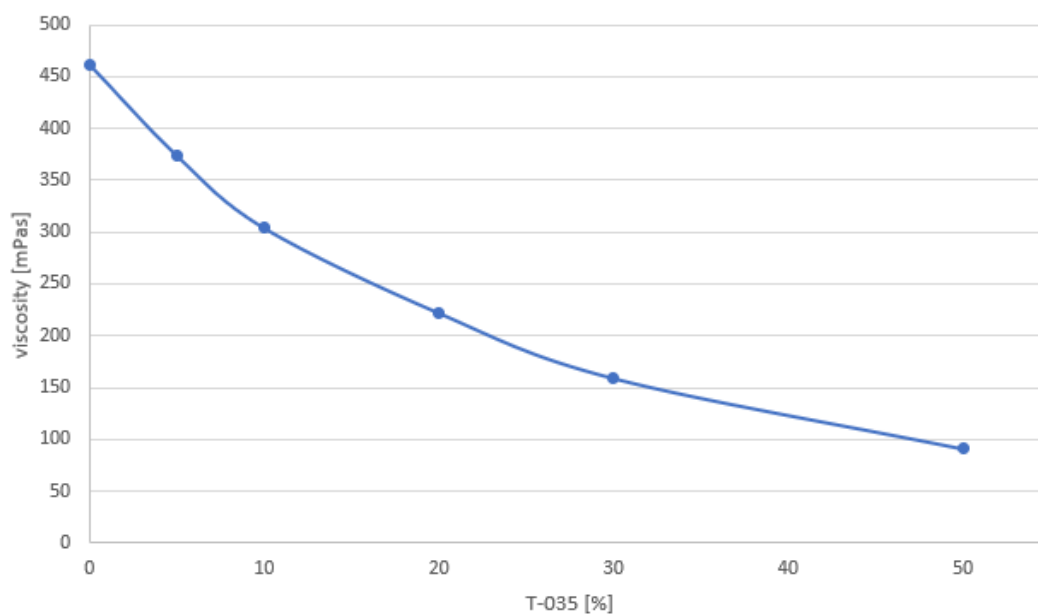
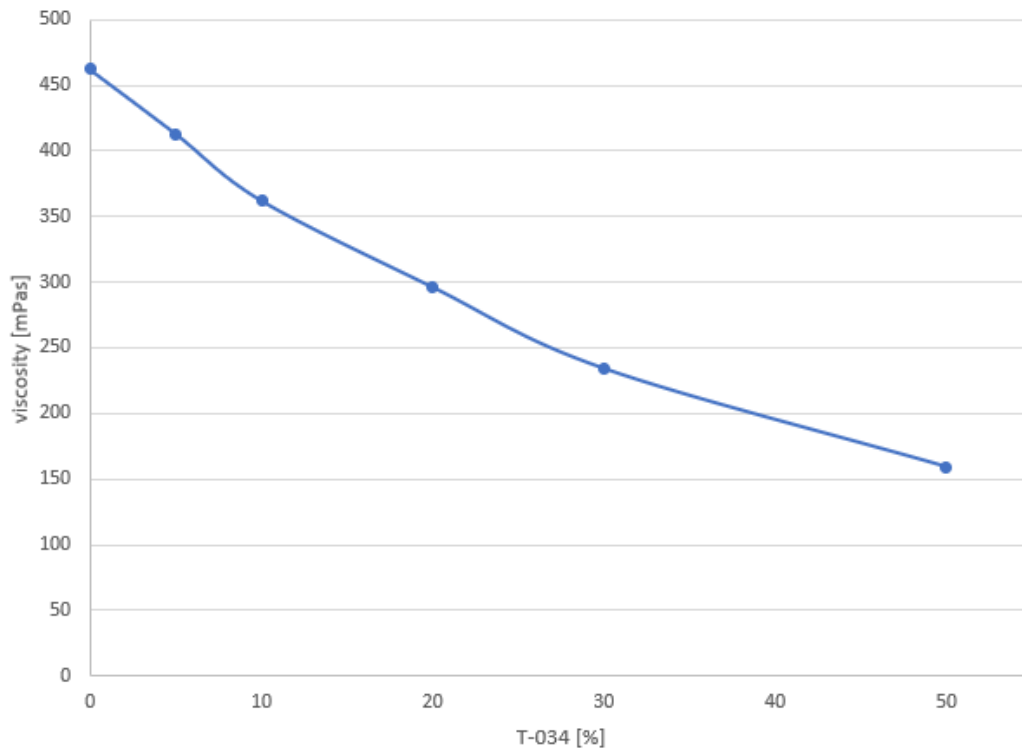




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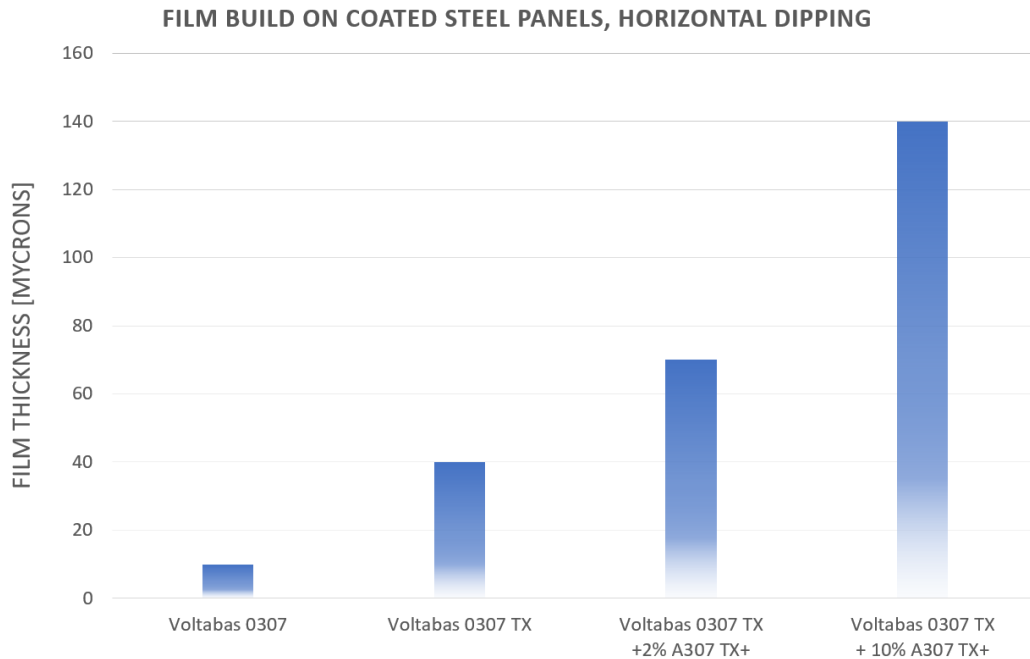


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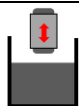
Film Build Tolerances



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Processing

The impregnating resin can be applied by using:

- all kind of conventional dip & bake equipment
- continuous dip machines and vacuum or vacuum pressure equipment
- hot dipping process
- especially for stators: resistance heating process with oven post-curing

It is highly recommended to stir the material prior to use.

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Stability

A virtually unlimited tank stability can be achieved Voltabas 0307 is kept below 25°C and at least 5 – 10 % of the tank contents are consumed monthly and replaced by fresh resin.

Example:

Tank contents: 1,000 kg

Resin refreshment: 50 – 100 kg per month

Voltabas 0307 is **sensitive to light** and therefore must be protected accordingly! If not consumed completely opened containers have to be closed immediately again after taking out the required amount of resin.



Curing

Voltabas 0307 is a low emission product. Nevertheless, to minimise evaporation of reactive components while curing, the impregnated objects should be heated up to the curing temperature in the shortest possible time. The air exchange in the curing zone should be kept to the minimum permitted by safety considerations.



If **active cooling** after the curing process is included in the process, please ensure to not exceed a temperature reduction on the part of maximal 5 °C (5 K) per minute to minimise cracking.



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Cleaning

Once cured Voltabas 0307 is almost insoluble. Therefore, all application equipment should be cleaned in time with cleaner **Voltatex® T050** or **Voltatex® T060** (data sheets available on request).

All cleaning and maintenance of the impregnating equipment should follow operational needs and must be carried out in accordance with the equipment manufacturer's instructions.



Packaging / Stock Items

Voltabas 0307 is available in:

- 20 kg cans (non-returnable)
- 200 kg drums (non-returnable)
- upon request: 1,000 kg containers (returnable - return service provided by the IBC manufacturer; not for oversea export)

Thixotropic additive, reactive thinner and activator are provided in suitable pack sizes following operational needs. Please contact us for details



Storage

A temperature range of above -20 °C and below 25 °C is recommended as storage temperature, at lower temperatures please consult us. In originally closed delivery items, the product has a **shelf life of 12 months** if the storage temperature doesn't exceed 25 °C. We recommend storing the product between 20 – 25 °C.



Health & Safety

Completely cured Voltabas 0307 is biologically inactive and not dangerous to health.

When processing the liquid resin, please consult the Material Safety Data Sheet (MSDS) of Voltabas 0307 and follow the regulations of your local authorities.



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Product Specifications

Table 1: Specifications of the Liquid Products as delivered



Viscosity at 25 °C acc. to DIN 53019	300 – 500 mPas
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Storage Stability / Shelf Life at 25 °C ²⁾	12 months
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Gel Time in acc. with Company Standard Energy Solutions 014 ^{1), 3)}	
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100 °C	20 – 40 min
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110 °C	5 – 15 min
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- 1) The values refer to the time of manufacturing. As the product is chemically reactive, both reactivity and viscosity can change during storage depending on the local storage conditions. Especially inside impregnating machines the product can take on individual values in dependence of material consumption / turnover and processing parameters.
- 2) As the product is chemically reactive, the shelf life is considered from the date of manufacturing, not from the delivery date. The shelf life of the delivered product batch is printed on the label of the delivery item or can be taken from the delivery papers.
- 3) Company Standard - Energy Solutions 014 „Reactivity Determination“ in acc. with DIN 46448



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Product Specifications

Table 2: Specifications of the Cured Product

Curing Condition: 2 h at 150 °C ⁴⁾



Dielectric Strength in acc. with IEC 60455-2
Test Method in acc. with IEC 60243-1

at room temperature	≥ 60 kV/mm
at 155 °C	≥ 65 kV/mm
at room temperature, after 96 h storage at 92 % rel. humidity	≥ 40 kV/mm
at room temperature, after 168 h storage in oil at 105 °C	≥ 65 kV/mm

Volume Resistivity in acc. with IEC 60455-2,
Test Method in acc. with IEC 60093

at room temperature	≥ 10 ¹³ Ω·cm
at 180 °C	≥ 10 ⁰⁸ Ω·cm
at room temperature, after 96 h water storage at room temperature	≥ 10 ¹¹ Ω·cm

4) The curing condition of 2h at 150 °C refers to all measurements of the cured product and is to be understood as temperature and time on the test specimen. Other curing conditions can lead to different values than given in this data sheet.



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Typical Characteristics

Table 3: Typical Characteristics of the Liquid Products as delivered



Appearance	transparent to yellowish, clear up to slightly turbid
Emissions while Curing in acc. with IEC 60455-3-5: 2006	approx. 0.8 – 1.0 % (weight) ⁵⁾
Curing Time	
Dip & Bake Process at 130 °C	4 h
Dip & Bake Process at 150 °C	2 h

5) the country-specific VOC value is available on request

The curing conditions stated here are to be understood as examples and recommendations based on best practice. They are considered from the time when the part reaches the indicated temperature. The required time to heat up the part to the curing temperature is not included. It is recommended to adapt the curing conditions to the requirements of the end product.



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Typical Characteristics

Table 4: Typical Characteristics of the Cured Product

Curing Condition: 2 h at 150 °C ⁴⁾



Bond Strength of Twisted Coils in acc. with IEC 60455-2,
Test Procedure in acc. to IEC 61033, Method A ⁶⁾

at room temperature	310 – 410 N
at 130 °C	35 – 70 N
at 155 °C	30 – 60 N
at 180 °C	20 – 50 N

⁶⁾ Magnet wire quality used for the preparation of the test specimen: MW 35 C, diameter 0,315 mm, grade 2, no lubricant



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Typical Characteristics

Table 5: Chemical Resistance



Solvent Vapours
in acc. with Company Standard - Energy Solutions 019

resistant to:

- hexane
 - acetone
 - xylene
-

Liquid Chemicals
in acc. with Company Standard - Energy Solutions 017

resistant to:

- distilled water
 - transformer oil
 - 5 % soap solution
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Contact

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