

## senotherm<sup>®</sup> - UHT 600



Product series:  
**1155**

## 1. STORAGE AND PREPARATION OF COATING PROCESS

### 1.1 QUALITY CONTROL OF MATERIALS ON RECEIPT

New supplies should be controlled with respect to the following parameter:

- a) Actual quantity supplied should correspond to the quantity indicated on the delivery note.
- b) Packaging supplied should be checked visually, so as to ensure that they were not damaged during transport.
- c) Supply viscosity should be conform to the values indicated in the according technical data sheet.

### 1.2 STORAGE

Material should preferably be stored at temperatures between 15° C and 25° C. The warehouse should meet official regulations regarding storage. Storage should further be organised according to the principle *first in - first out*, so that older batches are processed first.

When planning coating jobs, it should be taken into consideration that colour and degree of gloss of different batches may vary slightly. For this reason coating of diverse parts of one product should - if possible - only be coated with lacquer out of one batch.

If shelf life of the coating to be processed has already expired (we grant 6 months from manufacturing date), it should be verified in time whether lacquer is still in good condition and allows further processing. Respective criteria are: viscosity, a smooth and homogeneous surface as well as colour of a trial coating. It should be ensured that material is homogenised thoroughly!

### 1.3 PREPARATIONS FOR COATING PROCESS

Prior to processing material must be brought to room temperature and stirred thoroughly High-speed stirrers are to be preferred. Slowly running stirrers - integrated in many pressure tanks - are not suitable for homogenisation, in particular in case of sedimentation. **It is to be ensured that no humidity comes into the material, as this negatively influences shelf life.** Until next use, drums should be closed again tightly.

In general, an adjustment of viscosity is not necessary, as material is supplied at application viscosity. The system used for application of the coating should be equipped with a pre-filter with large mesh size (> 500 µm).

Should coating material out of drums that had already been opened be used, please note that any **skin** that may have formed can **not** be stirred into the material again, but has to be **removed**.

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## 2. COATING LINES

senotherm<sup>®</sup> coatings of series -1155- can be successfully applied by means of a variety of application methods.

In general, however, this coating is applied via spray lines with conventional high-pressure air atomization or via HVLP-systems. Other application systems are – after specific testing and verification – possible. For the sealing of sockets and pipe couplings Teflon tape in combination with Loctite glue has proven of value in practice. Mere hamp packs or self-cutting threads are not suited.

Depending on the geometry of the items or desired throughput /passage, it is also possible to apply material via customary air-assist electrostatic systems. However, as the products are not adjusted for ESTA spray, it would be reasonable to inform us on this particular requirement prior to placing the order, so as to avoid any processing problems.

An application by means of brush and flow coating is - because of the poor surface quality that would be achieved - generally not suitable. Due to the materials limited stability with regard to incorporation of humidity, an application by means of dip coating is impossible.

Standard types are also available in spray cans.

All parts carrying the lacquer, as e.g. pipes, seals etc. must offer sufficient resistance against hydrocarbons as e.g. xylene and benzene. For the sealing of sockets and pipe couplings Teflon tape in combination with Loctite glue has proven of value in practice. Mere hamp packs or self-cutting threads are not suited. Prior to application of another system, the line should be cleaned with thinner 00-9597-100066 or another suitable quality.

## 3. SUBSTRATES

This coating material allows use of the following substrates: aluminium, steel, stainless steel as well as temperature-resistant combined materials e.g. aluminised steel, chromized steel and Galvalumes. As is the case with most coating processes, the kind and quality of pretreatment has a considerable influence on the quality of the final finish and hence its durability.

The enclosed list indicates possible combinations of substrates and pretreatments. In general, abrasive pretreatments lead to better mechanical properties, however, minimum necessity is at any rate a clean, metallically pure substrate that is further free from grease. **For colours such as white, blue, red etc. a sanding is imperative.** Corrosion products (layers of rust or mill scale etc.) must be completely removed prior to application.

As the requirements, depending on the end use, vary considerably, each new material and processing combination should be tested with respect to its suitability for the respective application prior to use. As a rule, substrates should - after pretreatment - be coated as soon as possible in order to avoid belated contamination, the formation of oxide layers and the addition of humidity. If an intermediate storage is necessary, items should be stored in tempered rooms with only insignificant temperature changes, to avoid the formation of water of condensation.

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### 4. PROCESSING

If possible, application should be made under constant conditions as e.g. temperature and atmospheric humidity. As this is hardly fully feasible in practice, processing parameter as for instance supply and atomizing pressure must be adjusted under consideration of the changed conditions.

**PROCESSING SHOULD PREFERABLY BE MADE OUT OF CLOSED SYSTEMS AS E.G. PRESSURE TANKS, IN ORDER TO REDUCE THE INCORPORATION OF HUMIDITY AS MUCH AS POSSIBLE. THIS INCORPORATION OF HUMIDITY NEGATIVELY INFLUENCES STORAGE STABILITY. IF HAND GUNS ARE USED, DRUMS MUST BE CLOSED AGAIN TIGHTLY AFTER EACH TAKING OUT OF LACQUER. SPRAY GUNS SHOULD ALSO BE CLOSED DURING APPLICATION. TUBES AND PIPES MUST BE CLEANED AND RINSED AT THE END OF THE WORKING SHIFT AND PRIOR TO LONGER INTERRUPTIONS/ BREAKS OF WORK.**

For conventional high-pressure atomisation nozzle sizes of 1,0 – 1,7 mm with atomizing pressures of 2 - 5 bar (30-70 Psi) can be used. In practice nozzle sizes of 1.3 – 1.5 mm and atomizing pressures of 2.5 - 4 bar have proven to be advantageous.

**AS A RULE, IT IS TO BE TAKEN CARE THAT MAXIMUM FILM THICKNESS IS NOT EXCEEDED, AS THIS DOES NOT ONLY INCREASE MATERIAL COST, BUT MAY ALSO LEAD TO QUALITY PROBLEMS AS FOR INSTANCE CRACKING, PEELING OR ROLLING OFF IF EXPOSED TO RAPIDLY CHANGING TEMPERATURES.**

### 5. CURE

senotherm® paints of series -1155- are airdrying.

Under standard conditions (20° C and 50 % relative atmospheric humidity) and if applied at film thickness of 25 microns, films are *dust dry* after approx. 20-30 minutes and *dry to touch* after approx. 1 – 2 hrs.

During airdrying methyl alcohol is released. Therefore it is necessary to take care for proper ventilation! In practice, however, these values may – especially depending on the ambient temperature, the atmospheric humidity and the dry film thickness – vary.

**At temperatures below 10° C there is no sufficient through drying!**

Full properties are achieved after airdrying of 7 days. If items are subjected to temperature prior to complete drying (at least 2 days), subject system may also release visible fumes when being put into operation for the first time.

### 6. QUALITY AND APTITUDE TESTS

Due to the broad field of application, a great number of test methods for quality and aptitude tests exists. The below table provides a survey on customary tests, however, does not claim to be complete.

Test	Standard	Differing Conditions
Non-volatile substances	DIN EN ISO 3251	-
Determination of efflux time (viscosity)	DIN 53 211	4 mm cup at 23°C
Measuring of film thickness	DIN 50 981; DIN 50 982	
Cross-hatch test	ISO 2409	
Water of condensation Constant climate	DIN 50 017 KK	
Temperature stress test	ST 029	
Salt spray test	DIN 50 021 SS	

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## 7. SUBSTRATES

Substrate	Pretreatment	Suitability	Remarks
Sheet metal	degrease	limited suitability	At temperatures exceeding approx. 200 ° C an oxide layer forms that can lead to a loss of coating's adhesion.
	degrease & phosphatization	limited suitability	
	degrease & sandblasting	suitable	Low carbon (that can be enamelled) steels show considerably better results.
Cast iron	degrease & sandblasting	suitable	see sheet metal
	degrease & phosphatization	limited suitability	
Aluminised steel	degrease	limited suitability	Suitable up to approx. 500° C. Temperatures exceeding 500° C lead to an aludipping. The change of volume entailed with this phenomenon may cause adhesion problems.
	degrease & chromatization	limited suitability	
Hot dip, Sendzimir and electrolytically galvanized steel	degrease	limited suitability	Due to the restructuring of the zinc layer at temperatures exceeding 200° C peeling off may be caused. If exposed to vapours, there is the danger of loss of adhesion.
Galvan (hot-dip galvanized steel, however Zn, 95 % + 5 % Al)	degrease & chromatization	limited suitability	
Galvalum(hot-dip galvanized steel, however 45 % Zn+ 55 % Al)	degrease	limited suitability	
	Degrease & chromatization		
Rolled aluminium e.g. Al 99,5	degrease	suitable	Structural changes of the aluminium from temperatures exceeding 200° C. This leads to changes in stability. Corrosion resistance and adhesion considerably depend on the alloy used.
	degrease & chromatization	suitable	
	degrease & caustic wash	suitable	
	degrease & sandblasting (corundum)	well suited	
Cast aluminium	degrease & polishing	suitable	See rolled aluminium. A high silicon content (from approx. 11 %) can lead to non-homogeneous alloys and hence to different properties on the item
	degrease & sandblasting (corundum)	well suited	
Stainless steel	degrease	limited suitability	
	degrease & chromatization	limited suitability	
	degrease & sandblasting (corundum)	well suited	
Non-glazed ceramics Fire clay	degrease	limited suitability	Visual appearance heavily depends on absorbency.

**AS A RULE, EVERY MATERIAL COMBINATION HAS - PRIOR TO APPLICATION - BE TESTED WITH RESPECT TO ITS SUITABILITY.**

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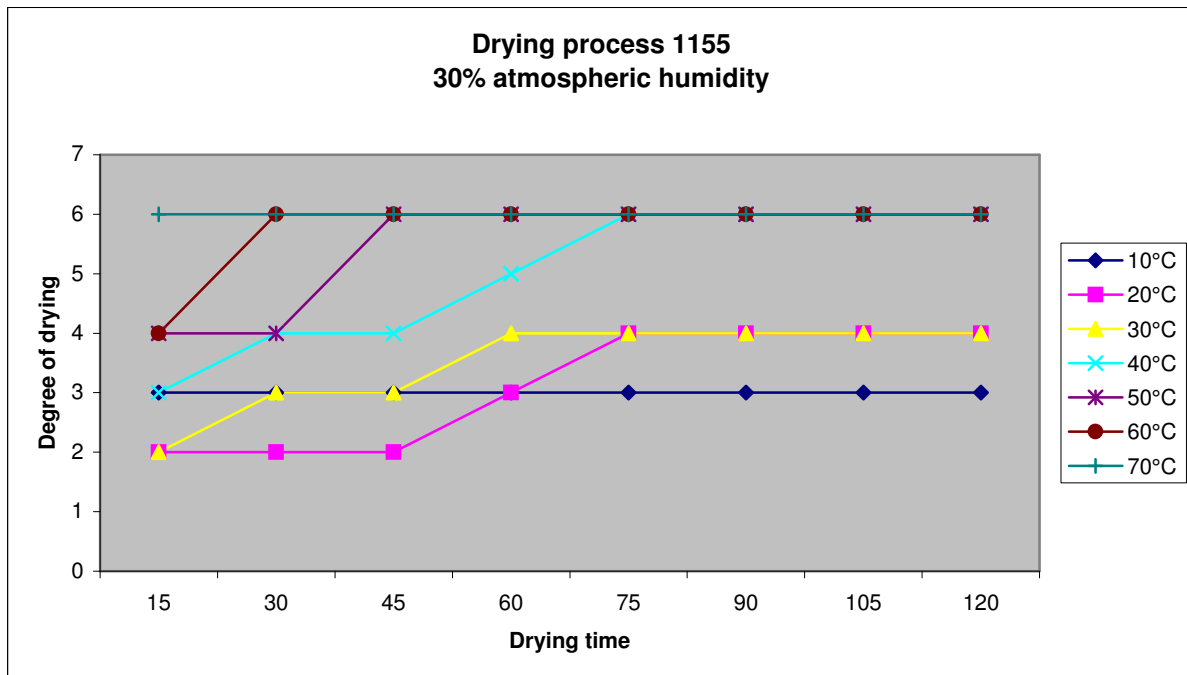


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**Drying process at different temperatures and atmospheric humidities after a flash off of 15 min. at room temperature**

**Degrees of drying:**

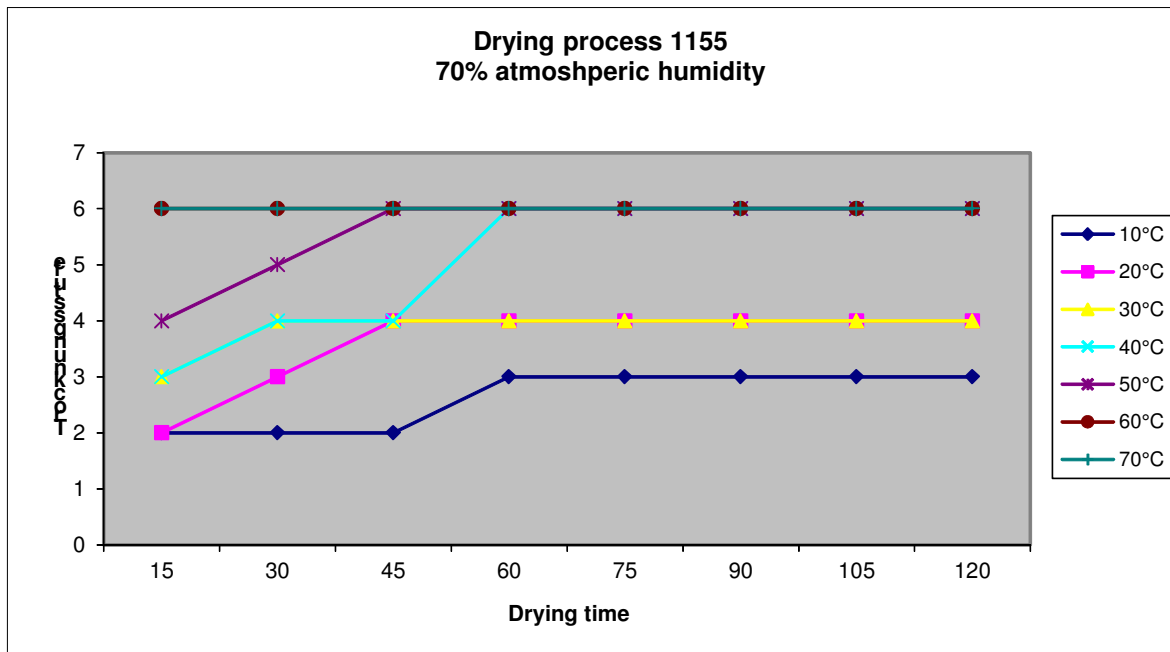
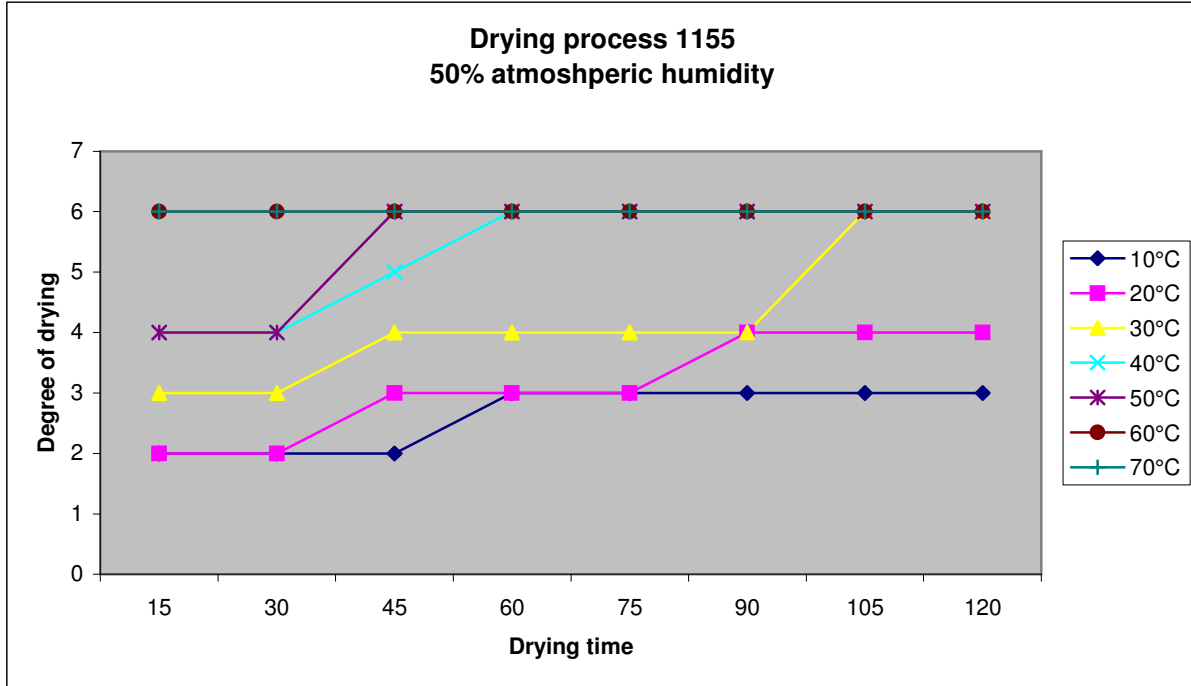
- 1.) Surface is still wet
- 2.) Surface is dry; Coating can be easily wiped off with the finger so that the substrate is exposed.
- 3.) Coating can no longer be wiped off, however, traces of the wiping can be seen.
- 4.) No traces of the wiping can be seen; The surface can be harmed with the finger.
- 5.) It is difficult to penetrate into/scratch the coating film with the fingernail.
- 6.) The coating film is dried through and can no longer be harmed with the fingernail.



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ALL VALUES HAVE BEEN DETERMINED UNDER LAB CONDITIONS AND MAY – DEPENDING ON THE GEOMETRY OF THE ITEMS, THE APPLICATION METHOD AND THE FILM THICKNESS – VARY IN PRACTICE.

2016-06-01/hh-sm-keil

The above indications were determined under lab conditions and in practice as being reference values. They correspond to today's developments in technique. Application equipment and application technique are beyond our influence. This information is given to the best of our knowledge, however, no liability or obligation whatsoever is assumed in connection with it.