

NN 120-20 (A)

Polysilazan-based polymer solution for high-performance coatings

Technical Information

PROPERTIES/PRODUCT DESCRIPTION

- **Clear, colourless solution**
- **Thermal or VUV curing**
- **Transparent, colourless and dense coating**
- **Easy-to-Clean**
- **Chemically resistant**
- **Temperature-resistant**
- **Oxidation and corrosion-resistant**
- **Scratch-resistant**
- **Slightly hydrophobic with low surface energy**

NN 120-20 (A) is a 20 wt-% solution of perhydropolysilazane (PHPS) in di-n-butylether.

NN 120-20 (A) can be applied easily by many common coating techniques. The polymer PHPS is usually bonded covalently to the surface of the substrate and therefore adheres well. The film can easily be cured at relatively low temperatures. This process can be accelerated by using VUV radiation. Curing in air at elevated temperature yields a glass-like SiO_x film with low surface energy. The coating is typically very thin (ca. 0.5 – 2 μm , depending on the application), hard, scratch resistant and slightly hydrophobic.

NN 120-20 (A) derived coatings are resistant against many chemical substances, oxidation or corrosion. Pore and crack-free films can easily be obtained and used as barrier coatings to protect the substrate from oxidation and corrosion.

APPLICATION

After curing **NN 120-20 (A)** can form dense and resistant films on coated metallic or plastic substrates. Coated substrates are well protected against damage caused by the environment (oxidation, corrosion, wear). Barrier or protective coatings are therefore an important field of application.

PRODUCT APPLICATION

NN 120-20 (A) is a ready-for-use formulation. When required the solution can be diluted with di-n-butylether. Addition of other solvents or other substances (e.g. pigments, additives, extenders, nanoparticles) may cause spontaneous ignition of **NN 120-20 (A)** or of reaction products (danger of fire).

NN 120-20 (A) can be applied by many common coating techniques (spraying, dip coating, slot die etc.).

TECHNICAL DATA

<i>Appearance:</i>	colourless liquid, ethereal smell
<i>Density:</i>	0.82 g/cm ³
<i>Viscosity:</i>	< 5 mPa.s (20 °C)
<i>Polymer content:</i>	20 wt-%
<i>Flash point:</i>	23.5 °C
<i>Ignition point:</i>	175 °C
<i>Shelf life:</i>	12 months at 10 °C
<i>Package sizes:</i>	6 litre steel drum containing 4 kg

INSTRUCTIONS FOR USE

NN 120-20 (A) should only be used by qualified persons.

NN 120-20 (A) strongly reacts with water, alcohols, protic solvents and amines with evolution of ammonia and hydrogen gas. Formation of self-igniting silanes is rarely possible. Using **NN 120-20 (A)** requires cleanliness and care, personal protective equipment is indispensable.

If **NN 120-20 (A)** is stored at 10 °C, the container should be warmed to ambient temperature before opening in order to avoid water condensation into the liquid. Open the barrels slowly and gradually release any gas pressure. Take precautions against electrostatic discharge during transfer into another container (e.g. grounding).

The substrate surface must be dry, free of grease, dirt, dust and other particles prior to application of **NN 120-20 (A)**. Traces of moisture or impurities should be removed.

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PROCESSING AND CURING

NN 120-20 (A) can be applied by many common coating techniques at room temperature onto the clean dry substrate. In a second step the solvent di-n-butylether should be evaporated at temperatures between 20 °C and 120 °C max. Curing of the solvent-free film can then be performed at temperatures between 180 °C (1 h) or 250 °C (5 min), depending on the substrate.

CLEANING AND REMOVAL

After use tools and equipment in contact with **NN 120-20 (A)** should be cleaned immediately by rinsing thoroughly with di-n-butylether. Removal of cured material is generally not possible.

SAFETY INSTRUCTIONS

Safety instructions are listed on the material safety data sheet and should be obeyed unconditionally.

- Wear solvent-resistant gloves (e.g. butyl or nitrile rubber gloves) when applying the product.
- Wear suitable eye protection (safety glasses or face shield).
- Provide adequate ventilation of working area.
- Wearing a half-mask with filter types A2 B2 E2 K2 Hg/P3 when applying the product is recommended.
- The solution must not be mixed or diluted with other solvents.
- Keep **NN 120-20 (A)** away from children.
- Store in a cool dry place with adequate ventilation (10 °C).
- Open the container periodically to release overpressure (ammonia, hydrogen).
- Keep away from fire, sparks, water, moisture, alcohols and other chemical substances.

STORAGE AND DISPOSAL OF WASTE

NN 120-20 should be stored in a cool (10 °C), dry place with sufficient ventilation. Before sealing any **NN 120-20 (A)**-containing package purge the package with a dry inert gas as argon or nitrogen. Ventilate sealed containers regularly (once per month) to release pressure. Ventilation dates should be verifiable. This activity will minimize the accumulation of ammonia, hydrogen and self-igniting silane gas. The package should be purged with a dry inert gas subsequently before sealing and storing.

A slow reaction of **NN 120-20 (A)** with moisture will lead to higher-viscous material which should not be used any more. The quality of the coating will suffer when using **NN 120-20 (A)** with higher viscosity.

NN 120-20 (A) leftovers must not be mixed with other liquid or solid waste. They can be diluted to 2 % with di-n-butylether. **NN 120-20 (A)** waste should be collected separately in appropriate, dry and pressure-resistant containers.

Waste containers should be stored in a dry, cool and well-ventilated place. To avoid a pressure built-up, do not tightly seal the waste containers during storage. We recommend monthly ventilation of the waste containers.

Disposal of waste containers with mixtures of **NN 120-20 (A)** and di-n-butylether must be done only at appropriate and authorized disposal sites according to the relevant regulations (see MSDS for more information). During transport, the waste containers must be sealed tightly. Disposal is preferably done by incineration. Unauthorized personnel are not allowed to transport and dispose of the waste.

TECHNICAL SERVICE

Our Application Department is available to answer technical questions on performance, use and chemical specifications.

This technical information does not replace the accompanying Safety Data Sheet. All technical information is based on practical experience. It is not generally obligatory as the practical conditions vary. Users should carry out their own tests. As the use of this product is beyond our control, we only accept liability for its consistent quality.