



Handling instructions for vrame therm products

1. Designation of materials/mixtures and the company

Trade name:	vrame therm
Manufacturer/supplier:	voestalpine Krems GmbH
Street/PO box:	Schmidhüttenstraße 5
Nationality code, zip, city:	A-3500 Krems
Telephone:	+43 50304 14 - 596

2. Composition, information on constituents

2.1. Chemical characterization (product)

The vrame therm brand name refers to the system profiles with thermal barriers produced by voestalpine Krems. The vrame therm profiles for doors and partition walls are flush-assembled and provide a system depth of 80 mm. The steel shells are roll-formed from hot-dip galvanized steel S250Z275-N-A according to EN 10219. The weld seam is accomplished by means of electric-resistance press welding. The profiles are made of two special welded tubes that are adhesive-bonded with a glass-fiber-reinforced epoxy-resin profile.

2.2. Chemical characterization (glass-fiber reinforcement)

Plastic profile made of unsaturated polyester (UP) resin and reinforced with glass-fiber rovings and transverse reinforcement layers, roughly 65 weight percent.

2.3. Chemical characterization (adhesive)

Two-component adhesive for structural bonding of plastic, metal and composite structures. The adhesive is resistant to moderate heat, water, humidity, aqueous chemicals and many non-polar petrochemical fluids, including gasoline, engine oil and diesel. The adhesive is not resistant to concentrated acids, bases or aggressive organic solvents such as toluene, ketones or esters.

3. Profile transportation

Profiles must be protected from wetness during transport. In the event that moisture is not avoided during loading or unloading, the profiles must be dried in a well ventilated building. Intermediately positioned wooden shims are used during manipulation of the profiles with a forklifts or cranes.

When loaded on trucks, the profiles are secured with tension belts in accordance with country-specific regulations. The intermediate wood packers and tension belts must be positioned on the wooden shims of each package in order to avoid deformation of the profiles.

Tension belts spanned too tightly may damage the glass-fiber-reinforcement of the vrame therm profiles. Profiles protected with shims of 5 cm in width are able to withstand a load of approximately 1000 kg.

The total load is calculated by adding the drawing stress of the tension belts to the weight force of the vrame therm profiles lying on top of the lowest layer and may not exceed 1000 kg per vrame therm profile.

We recommend that vrame therm packages be placed on the top of truck loads. The possible positions of tension belts are shown schematically in Figure 1 .

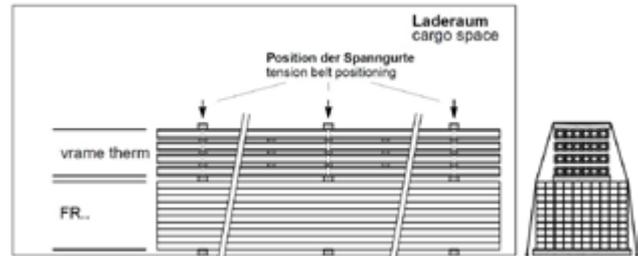


Figure 1. Securing of loads, tension belt positioning

4. Profile storage

The profiles must be stored in dry storage space. Ventilation must ensure that any moisture can dry quickly in order to prevent the formation of white rust. Profile packages must not be covered with tarpaulins or the like in order to prevent condensation caused by the temperature falling below the dew point. Profiles must be protected from wetness during transport. See Steel Information Center Data Sheet No. 112.

5. Profile cutting

Profiles must be cut with a circular or band saw that allows miter cutting.

Circular saw	Band saw
Saw blade for series 8050 at least Ø 350mm*	HSS M42 saw blade (bi-metal)
Saw blade for series 8075 at least Ø 370mm*	Vario tooth 5–8 or 6–10 (teeth per inch)
Cutting speed: 30–80 m/min	Cutting speed: 65–80 m/min

* This recommendation cannot replace the machine manufacturer's specifications.

The profiles are clamped into position using wooden spacers at the clamp jaws. Depending on the desired accuracy, we recommend undercutting the profiles with an allowance of approximately 0.5–1 mm.

6. First-aid measures

6.1. After inhalation

Product: Not applicable

Dust caused by cutting or machining: Move affected persons to fresh air. Should symptoms continue, consult a physician.

6.2. After eye contact

Product: Not applicable

Dust caused by cutting or machining: Use plenty of water to flush the eyes with open eyelids for at least fifteen minutes. Should symptoms continue, consult a physician.

6.3. After skin contact

Product: Not applicable

Dust caused by cutting or machining: Wash with soap and water.

6.4. After ingestion

Product: Not applicable

Dust caused by cutting or machining: Thoroughly rinse mouth with water. Should symptoms continue, consult a physician.

7. Fire-fighting measures

7.1. Suitable extinguishing media

H₂O, CO₂, sand, foam

7.2. Firefighting instructions

Entry to hazardous area not permitted without a self-contained respirator. Suitable protective equipment must be worn.

7.3. Special hazards arising from the substance or mixture

Dangerous vapors and gases may be generated in the event of a fire: carbon monoxide, carbon dioxide.

8. Measures to take when unintentionally released

8.1. Environmental protection measures

The product and any dust caused by cutting or mechanical processing may not be permitted to enter the water or the soil.

8.2. Containment and cleaning methods and materials

Mechanical pickup. Disposal of waste materials in accordance with legally applicable regulations.

9. Personal protective equipment

Wear goggles, a dust mask, long-sleeved clothing and protective gloves when cutting and machining. Do not clean contaminated safety goggles and work gloves with compressed air. Use a vacuum cleaner instead. This also applies to the work area when removing sawdust.

Skin irritations caused by dust may occur when cutting and machining.

10. Corrosion protection

A primer is mandatory for reasons of corrosion protection and improved bonding of the coating. The intended surface treatment technique must be in collaboration with the company commissioned with the coating activities and in compliance with the specifications of the powder paint supplier.

10.1. Cleaning

The temporary corrosion-protection coating must be removed prior to surface treatment in order to achieve a durable and long-lasting surface. Surfaces can be cleaned using either spray or immersion processes. In the case of spray or immersion cleaning, drill holes must be used to ensure that process liquids do not remain in hollow sections. Immersion cleaning is not recommended for therm PLUS for this reason. It must be guaranteed that all the cleaning liquid on the inside of the structure has drained, evaporated or been blown out with compressed air before the powder coating is applied. Drilled holes that open the cross section of the profile must be closed with heat-resistant silicone plugs. Sand blasting is not permitted when the composite profiles are intended to be powder coated. Ethanol and isopropyl alcohol may be used to manually clean the profiles, while acetone will harm the composite sections. In cases of doubt, a test profile or a non-visible section of the profile should be used to test compatibility of the cleaning liquid.

10.2. Powder coating

Trials have shown that the GRP core of the vrame therm profiles tend to degas (as is the case with hot-dip galvanized products). This makes it necessary to temper the vrame therm profiles prior to powder coating. This heat treatment may take place in combination with the surface-drying processes. As any other composite material, the GRP component of the vrame therm profile can withstand high temperatures for only a limited amount of time. Excessive process time and/or temperature may cause damage to the GRP member of the vrame therm profile. Low temperatures in combination with longer oven dwell times are recommended. The adhesive used to bond steel and GRP components does not conduct electricity and does not readily take on color. It can, however, be coated easily. Both steel shells must be electrically grounded during the coating process in order to avoid any problems with the coating quality. The best method is to create an electrically

conductive connection in a not-visible place such as a wire in a miter cut. Otherwise it will be necessary for the powder coating expert to ground one shell or clamp an electrically conductive bridge between the two steel shells. If the standard settings on the powder coating gun are insufficient to achieve the desired result, coating parameters must be manipulated as required. Reducing the flow of pressurized atomization air or the powder itself will lead to a so-called softer powder cloud and will thus improve coating results. This technique will ensure that even the non-conductive adhesive surfaces are fully coated.

10.2.1. Permissible tempering parameters

The object temperature and the oven dwell time during tempering may not exceed 140°C and 20 minutes or 200°C and 7 minutes, respectively. The object temperature is best measured by means of a magnetically attached thermocouple positioned on the broad side of one of the steel shells. Optimum values will depend on the applied powder coating and must be individually determined for each specific oven. Good results have been achieved with no damage to the glass-fiber reinforcement by adhering to values within the outlined area in Figure 2.

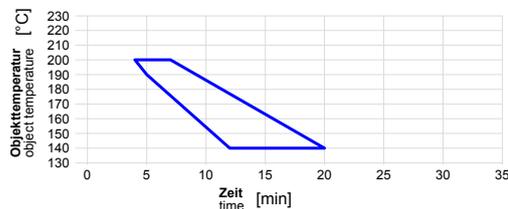


Figure 2: Time-temperature diagram, permissible range of tempering parameters

The use of a different powder paint is recommended should degassing still be visible in the cured powder coating after proper pre-treatment. Some powder paints are known to have repeated degassing problems.

Internal tests have shown that the NBP series of coatings produced by Adapta Color is especially well suited to the coating of metal-plastic profiles. This results achieved with these powder coatings have been excellent, even without profile tempering.

10.2.2. Permissible parameters for curing of powder coating

The object temperature and the oven dwell time during curing of the powder coating may not exceed 140°C and 30 minutes, 180°C and 28 minutes or 200°C and 23 minutes, respectively. The object temperature is best measured by means of a magnetically attached thermocouple positioned on the broad side of one of the steel shells.

Good results have been achieved with no damage to the glass-fiber reinforcement by adhering to values within the outlined area in Figure 3. The specific powder paint must be selected according to the available oven and based on the specifications and recommendations of the respective powder paint supplier.

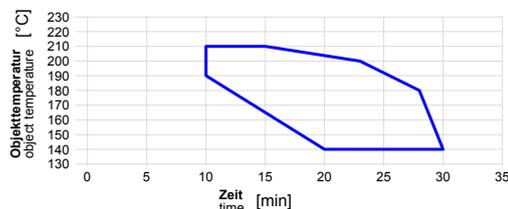


Figure 3: Time-temperature diagram, permissible range of curing parameters

11. Disposal

Waste cuttings and tubes no longer required must be disposed of as mixed scrap. The glass-fiber reinforcement material is subject to waste disposal code number 91101. All waste must be disposed of in compliance with legally applicable regulations at the respective location.