



## **Processing guidelines Domamid A1 compounds**

### **Injection moulding**

Domamid A1 compounds are non-reinforced and reinforced Polyamide 6 injection moulding grades with different molecular weights.

Domamid A1 compounds can be processed on all commercially available injection moulding machines, but the crucial factor is the correct configuration of the plasticizing unit. The feeding and melting of the granules are determined primarily by the screw geometry. Single-flighted three-section screws with effective non-return valves are recommended and shut-off nozzles are preferred. Open nozzles are possible but then the work should be carried out employing a screw decompression technique.

### **Storage and Drying**

Domamid A1 compounds are packed in sealed bags with a moisture content < 0,1 %, and can be processed without pre-drying. The packages should be stored in a dry place and only opened immediately before the processing so that the dry material – ready for the injection moulding – cannot absorb any moisture from the air. Domamid A1 compounds can be stored in its original packaging. Care should be taken to ensure that the packaging is not damaged. If portions are removed, the packaging has to be carefully sealed again in order to avoid any absorption of moisture. Opened bags can be sealed again to prevent moisture absorption of the hygroscopic PA-6 compounds. After prolonged exposure to moisture absorption, it may become necessary to pre-dry the material before processing. Improper storage can make drying necessary. The drying should be carried out for 2-4 hrs at a maximum of 80°C [176°F] in a vacuum dryer or dehumidifying dryer. Drying temperatures in excess of 80 °C should be avoided due to the danger of oxidative damage (such as yellowing or discoloration).

### **Processing**

The single-flighted three-section screws usual for other engineering thermoplastics are also suitable for the injection moulding of Domamid A1 compounds. In modern machines the effective screw length is 18–23 D and the pitch 1.0 D or in rare cases 0.8 D.

### **Melt temperature**

The requisite melt temperature depends on the flow distance and on the wall thickness of the moulded part. Higher melt temperatures than those indicated should be avoided because of possible thermal damage to the melt; slight elevations (+10 °C / +18 °F) are only permissible during extremely short moulding cycles or residence times of the melt in the cylinder (< 2 minutes).

Domamid A1 compounds (non-reinforced):

Melt temperature: **240 – 280 °C**

Domamid A1 compounds (reinforced):

Melt temperature: **250 – 290 °C**

### **Mould temperature**

A good temperature control system coupled with the correct temperature in the mould is the prerequisite for high-quality injection-moulded parts. The mould surface temperature affects the degree of crystallization, the surface quality, shrinkage, warpage, dimensional tolerances and the level of internal stresses.

Domamid A1 compounds (non-reinforced):

Mould temperature: **60 – 80 °C**

Domamid A1 compounds (reinforced):

Mould temperature: **80 – 100 °C**

### **Residence time in the cylinder**

The residence time of the plastic in the plasticizing cylinder is a major factor determining the quality of the moulding. Residence times that are too short can result in thermal inhomogeneity in the melt whereas if they are too long (> 10 min) they often produce heat damage. This in turn results in a loss in impact strength, which is sometimes visible from discoloration, dark stripes or burnt particles of product on the injection mouldings.

### **Injection rate, injection pressure, holding pressure und holding pressure time**

Rapid injection accounts for good filling of the mould and high reproduction accuracy of the moulded part contours. In order to prevent combustion due to compressed air (Diesel effect), the air has to be able to escape quickly when the melt is injected (mould venting). The injection pressure is determined to a large extent by the geometry of the moulded part. The holding pressure is normally considerably lower than the injection pressure. However, it has to be sufficiently high to prevent sink marks. If the holding pressure is too high, it generates stresses in the moulded part. The holding pressure has to be determined experimentally (gate sealing point determination).

### **Safety**

The processing equipment should be properly earthed. Small amounts of fumes may be generated during processing of the compounds. Proper ventilation is therefore recommended. Consult the Material Safety Datasheet for more details.