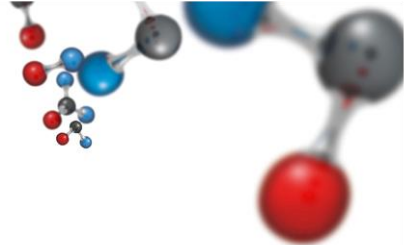


TECHNICAL DATA SHEET (TDS)

ONGRONAT® 3045



- **Product description:** ONGRONAT® 3045 is 4,4'-methylene diphenyl diisocyanate
- **Appearance:** White crystalline solid at room temperature, and colourless liquid in molten form
- **Features & benefits of the end product produced using ONGRONAT® 3045:** Weather, chemical and abrasion resistance, Flexibility, High strength, Durability, Comfort
- **Industry:** Construction, Transport, Wood, Clothing and footwear, Bedding and Furniture
- **Applications:** Wire and cable insulation, energy absorption, body panels, bumpers, paints and coatings, shoe soling, synthetic leather, sports & leisure, clothing fabrics, wood coating

SPECIFICATIONS

Property	Value	Dimension	Test Method
NCO	min. 33.4	wt%	ASTM D5155
Acidity	max. 10	ppm	BorsodChem Method PAK 126

OTHER PROPERTIES*

Property	Value	Dimension
Density [at 43 °C]	1.18	g/cm ³
Viscosity [at 43 °C]	10	mPa.s
Flash point	>200	°C
Vapour pressure [at 43 °C]	<10 ⁻⁴	mbar
Freezing point	38.8	°C

*Parameters given in the other property range are only typical values, therefore they are not part of the specification.

PACKING, STORAGE & TRANSPORT

Packing and transport: ONGRONAT® 3045 can be loaded and transported in road tankers, 225 kg non-returnable metal drums, or in metal cans under nitrogen blanket. We deliver ONGRONAT® 3045 in two forms: liquid (in bulk) and frozen (drummed). In the case of bulk product the loading temperature is 40-50 °C, while stowage of the cold drummed product takes place at temperatures below -20 °C. Please note that based on the distance of the destination the delivery temperature may differ from the loading temperature. The delivery temperature is 40-50 °C in bulk and is below -10 °C in the case of frozen drummed product. We ship ONGRONAT® 3045 according to the above mentioned delivery temperature ranges in the lack of any special requirement.

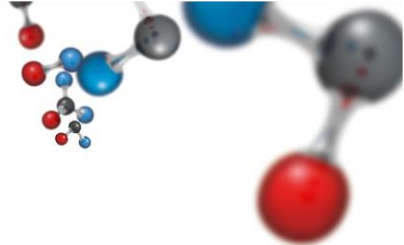
Storage: Because of its chemical nature ONGRONAT® 3045 is sensitive to the conditions of the storage (especially to the storage temperature), therefore after receiving the product care must be taken to move it to a storage (or tank) with the appropriate storage temperature as soon as possible. ONGRONAT® 3045 preserves its quality at 41-45 °C under a

nitrogen blanket (dew-point of - 40 °C) for two weeks from the production. In case of longer storage period - due to dimerisation - the product may become opaque. It is recommended to store the product below -20 °C in solid form, thus its quality may be preserved for max. three months from the production. Above this temperature the rate of dimerisation will increase exponentially with temperature increase and will result in a maximum at the surroundings of the melting point. It is not recommended to store the product at ambient temperature. When storing ONGRONAT® 3045 below -20 °C material needs to be remolten before processing. In the course of this, local overheating of the material must be avoided. Time of the remelting must be as short as possible, so heat transfer efficiency must be maximised. Based on the above information the possible ways of remelting are:

1) Air circulation in a furnace equipped with a built-in fan with a preset temperature of 70-80 °C. Rotate the drums on rolls with a velocity about 1-2 rotations/minute. If it is not possible, drums should be moved often. Using this procedure the

TECHNICAL DATA SHEET (TDS)

ONGRONAT® 3045



content of a drum (225 kgs net weight) can be remolten in 15 hours time.

2) Steam current: Drums (closed and in an upright position) are treated with low pressure (max 2.0 barg) wet steam in a closed container. Inside temperature must be kept at 80-90 °C, by controlling the inlet steam volume. If possible drums should be moved often. In such cases the length of the remelting period is 6 hours.

3) Water bath: Drums (closed and in an upright position) are treated with warm (60 °C) water circulated in a bath. Inside temperature must be kept at 80-90 °C, by controlling the inlet steam volume. Drums have to be rotated often. In this case remelting requires 6 hours. Water traces from the top must be wiped off to avoid contact of ONGRONAT® 3045 with water. Formation of slight overpressure may occur during the remelting process, which can be avoided by gradual release via careful opening of drums. To avoid contact with atmospheric moisture, dry nitrogen gas blanket should be applied to the drums (with a dew point of -40 °C) before closing them. Dry air used as a blanket may oxidise ONGRONAT® 3045 turning its colour to yellow, therefore its use needs to be avoided. Since it is soluble in isocyanates, carbon dioxide (CO₂) must not be used for the purpose of blanketing as an inert gas either.

SAFETY PRECAUTIONS

Handle the material with care. Avoid contact with water and moisture. Reaction with water always results formation of CO₂ and therefore increase of pressure in the closed storage container. Avoid contact with skin and eyes. Do not inhale the vapours of the product. Detailed safety information available on the www.borsodchem-group.com website and in the specific Material Safety Data Sheet.

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Technical Data Sheet (TDS)
ONGRONAT® 3045

www.borsodchem-group.com

This information is based on our most recent knowledge. However, the application and processing of the material after sale is beyond our control and we cannot assume responsibility for use of this material outside BorsodChem premises. The user is obliged to check the suitability of this material for the intended use and accepts sole responsibility for compliance with any legal requirements relating to its use. This document does not constitute a warranty or guarantee.



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