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# PS100/PS200/MDI 20802

HIGH PERFORMANCE COLD CASTABLE POLYUREHANE ELASTOMER

## TECHNICAL DATASHEET

**PS200** is a high performance crosslinker to be used with **PS100**. It produces elastomers with a range of hardness from 40 to 90 Shore A when used with isocyanate **MDI 20802**.

## Application

Elastomers produced using **PS200** are designed for applications where low temperature flexibility, chemical and oil resistance, high mechanical strength, and extremely good abrasion resistance is required.

## Product Specification

| | PS100 | PS200 | MDI 20802 |
|---|---|---|---|
| **Specific Gravity at 25°C** | 1.08 | 1.10 | 1.20 |
| **Viscosity at 25°C (cPs)** | 1500 - 1800 | - | 530 - 750 |
| **Appearance** | White opaque liquid | Milky yellow liquid | Light yellow liquid |

## Mixing and Curing Conditions

| Hardness (Shore A) | | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PS100C** | (pbw) | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **PS200** | (pbw) | 1.5 | 2.5 | 3.0 | 4.5 | 6.0 | 8.3 | 13.0 | 13.0 | 18.5 | 26 | 32 | 34 |
| **MDI 20802** | (pbw) | 20 | 22 | 25 | 26 | 27 | 28.5 | 33 | 35 | 38 | 45 | 51 | 53 |

## Processing Conditions

As with all polyurethane products, the product should not be exposed to very strong acids or bases. The highest temperature at which the product should be used is 80 to 85°C in order to maintain the full physical properties. The material can tolerate short period temperature increases up to approximately 120°C without permanently impairing any of the physical properties.

Please ensure that drums are well mixed prior to use.

**PS100** requires to be processed at a temperature of 25°C but can be processed at higher temperatures either to shorten moulding cycle times or to reduce viscosity to suit particular processing methods. **PS200** is added to the polyol prior to reacting with **MDI 20802**.

1. Temperatures of chemicals should be at about 25°C prior to processing. Tumble or stir drum of **PS100** and **PS200** thoroughly to ensure contents are homogeneous.

2. Mix components together thoroughly without entraining air.

3. Pour the mixture into preheated moulds treated with a suitable release agent.

4. Allow the mixture to gel and partially cure in the mould. The time required for this operation will vary according to mould design and size but will be in the region of 30 - 45 minutes.

5. Demould the finished piece and post cure overnight at room temperature. Optimum properties are attained after a further seven days at room temperature.

6. Any metal substrate which is to be lined or coated should be degreased, shot blasted or sandblasted and primed with a suitable priming system to ensure good adhesion of the urethane to the metal.

# Physical Properties

Properties presented below are to be used as a guide and not intended for specification purposes.

| | | 40 | 50 | 60 | 70 | 80 | 90 | TEST METHOD |
|---|---|---|---|---|---|---|---|---|
| **Hardness** | (Shore A) | 41 | 52 | 62 | 71 | 79 | 89 | ASTM D2240 |
| **Tensile Strength** | (MPa) | 2.3 | 3.3 | 4.2 | 6.3 | 8.2 | 12.9 | ASTM D412 |
| **100% Modulus** | (MPa) | 1.0 | 1.8 | 2.2 | 3.2 | 4.5 | 6.4 | ASTM D412 |
| **200% Modulus** | (MPa) | 1.6 | 3.1 | 3.6 | 5.2 | 6.9 | 8.9 | ASTM D412 |
| **300% Modulus** | (MPa) | - | - | - | - | - | 11.9 | ASTM D412 |
| **Elongation** | (%) | 295 | 220 | 235 | 260 | 255 | 310 | ASTM D412 |
| **Angle Tear Strength, Die C** | (kN/m) | 9.9 | 17.4 | 24.0 | 34.5 | 46.0 | 54.8 | ASTM D624 |
| **Trouser Tear Strength** | (kN/m) | 16.0 | 2.7 | 3.7 | 6.3 | 9.0 | 13.8 | ASTM D1938 |
| **Cured Density** | ($g/cm^3$) | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | ASTM D1817 |

Note: During processing, the material will experience around 2% shrinkage due to the heat of the reaction.

## Storage

**Polyol PS100** and **PS200** should be stored in a dry environment at ambient temperatures. Prolonged or repeated heating of the material will accelerate decomposition.

**PS100** and **PS200** are sensitive to moisture. Consequently, their containers must be stored in a dry area. Partly used containers must be resealed immediately.

**MDI 20802** needs to be stored between 20°C-25°C. At temperatures below 15°C crystallisation sets in. Freshly crystallised **MDI 20802** must be re-melted immediately by heating to a maximum temperature of 60°C-70°C. The entire drum needs to be homogenously mixed and stored at a temperature between 20°C-25°C.

## Packaging

**PS100** Standard packs consist of 5kg and 25kg plastic drums.

**PS200** Standard pack consists of 25kg steel drums, but 5kg quantities can be made available on request.

**MDI 20802** Standard packs consist of 5kg and 25kg steel drums, but 200kg quantities can be made available on request.

## Handling Precautions

Consult the product's material safety data sheet (MSDS) for specific hazard and handling information before use.