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**Technical Information**

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December 2001

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Replaces issue of June 1995

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**UPGRADE<sup>â</sup> (BASF Asphalt Modifiers)**

# **Butonal<sup>®</sup> NS 104**

Aqueous polymer dispersion for modifying asphalt cements

# Butonal<sup>®</sup> NS 104

## Nature

High solids, cold polymerized anionic styrene-butadiene dispersion.

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## Properties

### Product specification

Solids content	%	70-72
pH		10.0-11.0
Brookfield viscosity RVT spindle #3 at 20 rpm	mPa•s	1000-1500

### Other properties of the dispersion

Bound styrene	%	24
Residual monomer	%	0.08 max.
Surface tension	mN/m	34
Specific gravity		0.94
Antioxidant		none
Glass transition temperature (DSC)	°C	-58
Weight/volume	lb/gal	7.8
	kg/l	0.94

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## Applications

### Features

Butonal NS 104 is a mechanically stable dispersion which disperses readily in asphalt cements. It is used to modify asphalt cements when used in hot mix and chip seal applications.

### Processing

Periodic mechanical stirring is required to maintain a homogeneous mixture. Some separation is possible due to the specific gravity and particle size distribution of these dispersions.

Generally, the preferred means of stirring is with a separate propeller type stirrer. This low-speed, low-shear mechanical stirrer can be located off-center, set at an angle, or side mounted near the bottom to prevent foaming or vortexing. Center stirring requires tank baffles. It is recommended that the material be agitated for 10-20 minutes every 24 hours when the material is being used in production.

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## Safety

### General

The usual safety precautions when handling chemicals must be observed. These include the measures described in Federal, State and Local health and safety regulations, thorough ventilation of the workplace, good skin care and wearing of protective goggles.

### Material Safety Data Sheet

All safety information is provided in the Material Safety Data Sheet for Butonal NS 104.

### Industrial Hygiene

Butonal NS 104 does not exert any harmful effects provided it is used for the purpose for which it is intended and processed in accordance with current industrial practice. Butonal NS 104 may contain technically unavoidable traces of volatile organic compounds. Observe appropriate workplace exposure limits when indicated in the Material Safety Data Sheet. Butonal NS 104 may irritate the skin and mucous membranes on prolonged contact with the product.

## Labelling

Butonal NS 104 is not classified as a hazardous product under DOT or OSHA regulations or as a controlled product under WHIMS (Canada) regulations. It does not contain any hazardous components at levels which have implications for labelling under these regulations.

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## Storage

Butonal NS 104 has a shelf life of six months provided it is stored in a cool place and is protected from freezing. Technical information regarding the storage of BASF polymer dispersion products is available on request.

In common with other dispersions, Butonal NS 104 is sensitive to multivalent ions; for example, iron, copper, zinc, and aluminum. Contact of the product with these metal ions may affect the stability of the product. This applies not only to storage tanks, but also to pipelines, stirrers, product containers, etc.

## Equipment

Tanks recommended for storage are stainless steel or fiberglass. Carbon steel tanks should be epoxy coated.

Filters and piping should be stainless steel. Basket-type filters of 40 mesh are recommended.

Pumps used to transfer latex have to be low shear types. Progressive cavity Moyno pumps and dual diaphragm air pumps are two recommended types. Gear pumps are to be avoided.

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## Important

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