

# Data Sheet

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## Butvar® B-90

Butvar B-90 is a thermoplastic, polyvinyl butyral resin which offers a unique combination of properties for coating or adhesive applications. The use or addition of polyvinyl butyral to a system imparts adhesion, toughness, and flexibility. PVB retains the clarity of the coating and offers reactive hydroxyl sites for crosslinking with thermoset. Butvar B-90 is formulated into many applications including:

- WASH PRIMERS AND GENERAL METAL OR WOOD COATINGS
- BINDERS FOR ADHESIVES AND STRUCTURAL COMPOSITES
- BINDERS FOR INKS AND TONERS

## Physical Properties

### Specifications

Property	Limits	Test Method
Hydroxyl Content, %		Titration
(Expressed as % Polyvinyl Alcohol)	18.0-20.0	WS-03-90-09B
Solution Viscosity, cps		Ostwald Viscometer
(6% solids in methanol @ 20°C)	13.0-17.0	WS-03-90-01C
		Thermogravimetric
Volatile Content, %	5.0 max.	WS-03-90-03B

### Useful Information

Form	White, free-flowing powder
Acetate Content, (% Polyvinyl Acetate)	1.5 maximum
Butyral Content, (% Polyvinyl Butyral)	80 (approximate)
Molecular Weight* (Mw)	70,000-100,000
Specific Gravity	1.100
Glass Transition Temperature (Tg), °C	72-78

\*Size exclusion chromatography with low angle laser light scattering standard

### MSDS

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# PROPERTIES

## CHEMISTRY

Acetals, such as polyvinyl butyral, are formed by the well-known reaction between aldehydes and alcohols. The addition of one molecule of an alcohol to one molecule of an aldehyde produces a hemiacetal. Hemiacetals are rarely isolated because of their inherent instability, but, rather, are further reacted with another molecule of alcohol to form a stable acetal.

Polyvinyl acetals are prepared from aldehydes and polyvinyl alcohols. Polyvinyl alcohols are high molecular weight resins containing various percentages of hydroxyl and acetate groups produced by hydrolysis of polyvinyl acetate.

The conditions of the acetal reaction and the concentration of the particular aldehyde and polyvinyl alcohol used are closely controlled to form polymers containing predetermined proportions of hydroxyl groups, acetate groups and acetal groups. The final product may be represented by the following stylized structure:

The proportions of A, B and C are controlled, and they are randomly distributed along the molecule.

