



# Vasavibala Resins (P) Ltd.

POLYMER DIVISION  
Manufacturers of Unsaturated Polyester Resins

## TECHNICAL BROCHURE – UNSATURATED POLYESTER RESINS

### **GRADE: VBR 4518P - VINYLESTER PULTRUSION RESIN**

VBR 4518P is a medium reactive vinyl ester resin based on Bisphenol-A, epoxy resin and methacrylic acid. It incorporates the workability and curing properties of epoxy resin to the level of unsaturated Polyester Resins while retaining the outstanding properties of epoxy resin. Compared to Bisphenolic Polyester, VBR 4518P offers equal or better corrosion resistance to oxidizing acids and solvents along with excellent mechanical, electrical and adhesive properties. Viscosity is higher than the normal vinyl ester suitable for tooling purpose.

#### **PROPERTIES OF LIQUID RESIN**

Appearance	Pale yellowish to Pale brownish clear liquid
Viscosity at 25°C, cP	800 – 1000
Specific gravity at 25°C (Brookfield Viscometer LV DV II + Pro Spindle 63, rpm 30)	1.07 - 1.08
Acid value, mg KOH/gm	07 - 11
Volatile content, %	34 - 38
Shelf life at 25°C, months	3
Gel time at 25°C, minutes*	15 - 35
Peak exotherm, °C**	160 - 170

- Mix VBR 4518P-100gm, VBR 1201-1.5ml, VBR 1206-1.5 ml, VBR 1204-1.5ml
- \*\* Under insulated condition for 100 gm mixture

**Caution:** VBR 1201 & VBR 1206 should never be independently mixed with VBR 1204, as this would cause explosion.

#### **PROPERTIES OF UNREINFORCED CURED RESIN CASTING**

The specimens are prepared by separately mixing 1.5% of VBR 1201, VBR 1206 and VBR 1204 with 4518P and casted in a closed cell of specified dimension, The castings are cured for 24 hrs at room temperature and post curing at 100°C for 3 hrs. 24 hrs. at room temperature and post curing at 90° C for 4 hrs.

## PROPERTIES OF RESIN CASTING

Hardness (Barcol)	40 – 45
Tensile strength, MPa	60 -65
Flexural strength, MPa	>90
Heat distortion temperature, °C	100 – 105
Water absorption at 25°C over a period of 700 hrs, %	0.30
Elongation at break, %	>3

## CHEMICAL RESISTANCE

Casting of VBR 4518P exhibit acid, base and solvent resistance over a wide temperature range. It shows excellent resistance towards hydrochloric acid, chlorinated brine, sodium hydroxide, sodium sulphide, chlor alkali plant residue etc.

## THERMAL STABILITY

Casting of VBR 4518P shows better dry heat stability than its Isophthalic counterpart. It becomes elastomeric at 150°C.

**TEST METHODS** IS 6746 – 1994.

## APPLICATIONS

VBR 4518P has outstanding corrosion resistance and stress cracking. It is recommended for pultrusion, corrosion resistant process equipments, storage tanks, pipelines, flooring, Chimney, Marine equipments etc. In non-corrosion sector, VBR 4518P is used where tenacity and low temperature resistance are required.

## STORAGE

VBR 4518P should be stored in closed containers inside covered area. The storage temperature not exceeding 25°C is preferable. At higher storage temperature, the shelf life decreases sharply. It should not be exposed to direct sunlight, heat radiation and moisture; these may cause premature gelation. VBR 4518P is guaranteed for 3 months from the date of manufacture provided the storage conditions are strictly adhered to.

**PACKING:** 35 kg HDPE Carboys and 220 kg coated steel barrels.