VALOX™ FR Resin DR48 - Europe

Polybutylene Terephthalate **SABIC**



Technical Data

Product Description

VALOX DR48 is a 17% glass filled, flame retardant Polybutyleneterephthalate (PBT) injection moldable grade with excellent chemical resistance. It has a UL94V0@0.90mm and 5VA@3.0mm flame rating. This is a good candidate for a variety of applications in the electrical industry including connectors, bobbins, and switches.

General			
Material Status	Commercial: Active		
UL Yellow Card ¹	E45329-236616E45329-103127446		
Search for UL Yellow Card	• SABIC		
Availability	Europe		
Uses	 Appliances Automotive Exterior Parts Automotive Interior Parts Automotive Under the Hood Construction Applications Electrical Parts Electrical/Electronic Applications 	 Electronic Displays Industrial Applications Lawn and Garden Equipment Lighting Applications Material Handling Medical Devices Medical/Healthcare Applications 	 Non-specific Food Applications Outdoor Applications Rail Applications Recreational Vehicle Applications Water Management
Also Available In	Asia Pacific	Latin America	North America

Density / Specific Gravity	Physical	Nominal Value Unit	Test Method
Test Method	Density / Specific Gravity		
Melt Mass-Flow Rate (MFR) (266°C/5.0 kg) 90 g/10 min ASTM D1238 Melt Volume-Flow Rate (MVR) ISO 1133 250°C/2.16 kg 14 cm²/10 min 250°C/5.0 kg 40 cm²/10 min 266°C/5.0 kg 70 cm²/10 min Molding Shrinkage³ Internal Method Across Flow 0.60 to 0.90 % Flow 0.50 to 0.80 % Water Absorption ISO 62 Saturation, 23°C 0.17 % Equilibrium, 23°C, 50% RH 0.070 % Mechanical Nominal Value Unit Test Method Tensile Modulus 1 4 7100 MPa ASTM D638 2 7000 MPa ISO 527-1/1 Tensile Strength 93.0 MPa ASTM D638 Yield 93.0 MPa ASTM D638 Yield 104 MPa ISO 527-2/5 Break 93.0 MPa ASTM D638 Yield 2.0 %		1.53 g/cm ³	ASTM D792
Melt Volume-Flow Rate (MVR) ISO 1133 250°C/2.16 kg 14 cm²/10min 250°C/5.0 kg 40 cm²/10min 250°C/5.0 kg 10 cm²/10min 250°C/5.0 kg 10 cm²/10min Molding Shrinkage ³ Internal Method Across Flow 0.60 to 0.90 % Flow 0.50 to 0.80 % Water Absorption ISO 62 Saturation, 23°C 0.17 % Equilibrium, 23°C, 50% RH 0.070 % Mechanical Nominal Value Unit Test Method Tensile Modulus 150 527-1/1 4 7100 MPa ASTM D638 5 7000 MPa ISO 527-1/1 Tensile Strength 104 MPa ISO 527-2/5 Break 5 93.0 MPa ASTM D638 Yield 5 93.0 MPa ASTM D638 Break 5 93.0 MPa ASTM D638 Break 6 93.0 MPa ASTM D638 Break 7 2.0 % ASTM D638 Yield 5 2.0 % ASTM D638 Yield 5 2.0 % ASTM D638 </td <td></td> <td>1.51 g/cm³</td> <td>ISO 1183</td>		1.51 g/cm³	ISO 1183
250°C/2.16 kg 14 cm³/10min 250°C/5.0 kg 40 cm³/10min 265°C/5.0 kg 70 cm³/10min Molding Shrinkage ³ Internal Method Across Flow 0.60 to 0.90 % Flow 0.50 to 0.80 % Water Absorption ISO 62 Saturation, 23°C 0.17 % Equilibrium, 23°C, 50% RH 0.070 % Mechanical Nominal Value Unit Test Method Tensile Modulus 7100 MPa ASTM D638 7100 MPa ASTM D638 7000 MPa ISO 527-1/1 Tensile Strength Yield 5 93.0 MPa ASTM D638 Yield 104 MPa ISO 527-2/5 Break 93.0 MPa ASTM D638 Break 2.0 % ASTM D638 Yield 5 2.0 % ASTM D638 Yiel	Melt Mass-Flow Rate (MFR) (266°C/5.0 kg)	90 g/10 min	ASTM D1238
250°C/5.0 kg 40 cm³/10min 265°C/5.0 kg 70 cm³/10min Molding Shrinkage³ Internal Method Across Flow 0.60 to 0.90 % Flow 0.50 to 0.80 % Water Absorption ISO 62 Saturation, 23°C 0.17 % Equilibrium, 23°C, 50% RH 0.070 % Mechanical Nominal Value Unit Test Method Tensile Modulus Test Method ⁴ 7100 MPa ASTM D638 ° 7000 MPa ISO 527-1/1 Tensile Strength 93.0 MPa ASTM D638 Yield ⁵ 93.0 MPa ASTM D638 Yield 5 93.0 MPa ASTM D638 Break 93.0 MPa ASTM D638 Break 93.0 MPa ASTM D638 Break 2.0 % ASTM D638 Yield ⁵ 2.0 % ASTM D638 Yield ⁵ 2.0 % ASTM D638 Flexural Modulus 350 527-2/5 Flexural Modulus 50.0 mm Span ⁶ 5200 MPa ASTM D790	Melt Volume-Flow Rate (MVR)		ISO 1133
265°C/5.0 kg 70 cm³/10 min Molding Shrinkage ³ Internal Method Across Flow 0.60 to 0.90 % Internal Method Flow 0.50 to 0.80 % ISO 62 Water Absorption ISO 62 Saturation, 23°C 0.17 % Equilibrium, 23°C, 50% RH Test Method Mechanical Nominal Value Unit Test Method Tensile Modulus - 4 4 4 4 4 4 1 1 4	250°C/2.16 kg	14 cm ³ /10min	
Molding Shrinkage 3 Across Flow Internal Method Across Flow Flow 0.60 to 0.90 % 0.50 to 0.80 % Water Absorption Saturation, 23°C Equilibrium, 23°C, 50% RH ISO 62 Mechanical Nominal Value Unit Test Method Tensile Modulus T100 MPa ASTM D638 7000 MPa ISO 527-1/1 Tensile Strength 93.0 MPa ASTM D638 Yield 5 93.0 MPa ASTM D638 Yield 104 MPa ISO 527-2/5 Break 93.0 MPa ASTM D638 Break 104 MPa ISO 527-2/5 Tensile Elongation 2.0 % ASTM D638 Yield 5 2.0 % ASTM D638 Yield 6 2.0 % ASTM D638 Yield 5 3.0 %	250°C/5.0 kg	40 cm³/10min	
Across Flow 0.60 to 0.90 % Flow 0.50 to 0.80 % Water Absorption ISO 62 Saturation, 23°C 0.17 % Equilibrium, 23°C, 50% RH 0.070 % Mechanical Nominal Value Unit Test Method Tensile Modulus4 7100 MPa ASTM D638 7000 MPa ISO 527-1/1 Tensile Strength Yield 9 93.0 MPa ASTM D638 Yield 104 MPa ISO 527-2/5 Break 9 93.0 MPa ASTM D638 Break 104 MPa ISO 527-2/5 Tensile Elongation Yield 9 2.0 % ASTM D638 Yield 2.0 % ASTM D638 Yield 2.0 % ASTM D638 Freak 2.0 % ASTM D638 Yield 3.0 % ASTM D638 Yield 3.0 % ASTM D638 Yield 5 2.0 % ASTM D638 ASTM D638 ASTM D638 ASTM D790	265°C/5.0 kg	70 cm³/10min	
Flow 0.50 to 0.80 % Water Absorption ISO 62 Saturation, 23°C 0.17 % Equilibrium, 23°C, 50% RH 0.070 % Mechanical Nominal Value Unit Test Method Tensile Modulus 7100 MPa ASTM D638 7000 MPa ISO 527-1/1 Tensile Strength Yield 5 93.0 MPa ASTM D638 Yield 5 93.0 MPa ASTM D638 Yield 104 MPa ISO 527-2/5 STM D638 Break 5 93.0 MPa ASTM D638 Break 6 2.0 % ASTM D638 Yield 2.0 % ISO 527-2/5 Break 5 2.0 % ASTM D638 Break 6 2.0 % ASTM D638 Break 6 2.0 % ASTM D638 Break 7 2.0 % ASTM D638 Break 6 2.0 % ASTM D638 Break 9 2.0 %	Molding Shrinkage ³		Internal Method
Water Absorption ISO 62 Saturation, 23°C 0.17 % Equilibrium, 23°C, 50% RH 0.070 % Mechanical Nominal Value Unit Test Method Tensile Modulus 7100 MPa ASTM D638 4 7000 MPa ISO 527-1/1 Tensile Strength 1SO 527-2/5 Yield 5 93.0 MPa ASTM D638 Yield 104 MPa ISO 527-2/5 Break 5 93.0 MPa ASTM D638 Break 104 MPa ISO 527-2/5 Tensile Elongation 2.0 % ASTM D638 Yield 2.0 % 2.0 % ASTM D638 Yield 2.0 % ASTM D638 Break 5 2.0 % ASTM D638 Break 6 2.0 % ASTM D638 Break 7 2.0 % ASTM D638 Break 9 2.0 % ASTM D638 Break 9 2.0 % ASTM D638 Break	Across Flow	0.60 to 0.90 %	
Saturation, 23°C 500 RH 0.17 % Equilibrium, 23°C, 50% RH 0.070 % Mechanical Nominal Value Unit Test Method Tensile Modulus 4 7100 MPa ASTM D638	Flow	0.50 to 0.80 %	
Equilibrium, 23°C, 50% RH 0.070 % Mechanical Nominal Value Unit Test Method Tensile Modulus 7100 MPa ASTM D638 7000 MPa ISO 527-1/1 Tensile Strength Yield ⁵ 93.0 MPa ASTM D638 Yield MPa ISO 527-2/5 Break Seak 93.0 MPa ASTM D638 Break 104 MPa ISO 527-2/5 Tensile Elongation Vield MPa ISO 527-2/5 Yield Seak Seak 2.0 % ASTM D638 Yield Seak Seak 2.0 % ASTM D638 Yield Seak Seak 2.0 % ASTM D638 Flexural Modullus 50.0 mm Span Span Span Span Span Span Span Span	Water Absorption		ISO 62
Mechanical Nominal Value Unit Test Method Tensile Modulus 7100 MPa ASTM D638 4 7100 MPa ISO 527-1/1 Tensile Strength ISO 527-1/1 Yield 5 93.0 MPa ASTM D638 Yield 104 MPa ISO 527-2/5 Break 5 93.0 MPa ASTM D638 Break 104 MPa ISO 527-2/5 Tensile Elongation Yield 5 2.0 % ASTM D638 Yield 5 2.0 % ISO 527-2/5 Break 5 2.0 % ASTM D638 Break 5 2.0 % ASTM D638 Break 6 2.0 % ISO 527-2/5 Flexural Modulus 5 5200 MPa ASTM D790	Saturation, 23°C	0.17 %	
Tensile Modulus 7100 MPa ASTM D638 7000 MPa ISO 527-1/1 Tensile Strength 93.0 MPa ASTM D638 Yield 5 93.0 MPa ASTM D638 Yield 93.0 MPa ASTM D638 ASTM D638 Break 1 104 MPa ISO 527-2/5 Tensile Elongation Yield 5 2.0 % ASTM D638 Yield 2.0 % ISO 527-2/5 Break 5 2.0 % ASTM D638 Break 5 2.0 % ASTM D638 Break Break 6 2.0 % ASTM D638 Break 7 2.0 % ASTM D638 Break 8 2.0 % ASTM D638 Break 9 3.0 % ASTM D638		0.070 %	
4	Mechanical	Nominal Value Unit	Test Method
Tensile Strength Yield ⁵ Yield ⁵ Break ⁶ Break Tensile Elongation Yield ⁵ Yield ⁶ Break Tensile Elongation Yield ⁶ Yield ⁶ Tensile Elongation Yield ⁶ Yield ⁸ Yield ⁹ Yield	Tensile Modulus		
Tensile Strength Yield ⁵ 93.0 MPa ASTM D638 Yield 104 MPa ISO 527-2/5 Break ⁵ 93.0 MPa ASTM D638 Break 104 MPa ISO 527-2/5 Tensile Elongation Yield ⁵ 2.0 % ASTM D638 Yield ⁵ 2.0 % ISO 527-2/5 Break ⁵ 2.0 % ASTM D638 Break 2.0 % ISO 527-2/5 Flexural Modulus 50.0 mm Span ⁶ 5200 MPa ASTM D790	4	7100 MPa	ASTM D638
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Yield 104 MPa ISO 527-2/5 Break 5 93.0 MPa ASTM D638 Break 104 MPa ISO 527-2/5 Tensile Elongation Yield 5 2.0 % ASTM D638 Yield 2.0 % ISO 527-2/5 Break 5 2.0 % ASTM D638 Break 2.0 % ISO 527-2/5 Flexural Modulus 50.0 mm Span 6 5200 MPa ASTM D790	Tensile Strength		
Break 5 93.0 MPa ASTM D638 Break 104 MPa ISO 527-2/5 Tensile Elongation Yield 5 2.0 % ASTM D638 Yield 2.0 % ISO 527-2/5 Break 5 2.0 % ASTM D638 Break 2.0 % ISO 527-2/5 Flexural Modulus 50.0 mm Span 6 5200 MPa ASTM D790	Yield ⁵	93.0 MPa	ASTM D638
Break 104 MPa ISO 527-2/5 Tensile Elongation 2.0 % ASTM D638 Yield 5 2.0 % ISO 527-2/5 Break 5 2.0 % ASTM D638 Break 2.0 % ISO 527-2/5 Flexural Modulus 50.0 mm Span 6 5200 MPa ASTM D790	Yield	104 MPa	ISO 527-2/5
Tensile Elongation Yield ⁵ 2.0 % ASTM D638 Yield 2.0 % ISO 527-2/5 Break ⁵ 2.0 % ASTM D638 Break 2.0 % ISO 527-2/5 Flexural Modulus 50.0 mm Span ⁶ 5200 MPa ASTM D790	Break ⁵	93.0 MPa	ASTM D638
Yield 5 2.0 % ASTM D638 Yield 2.0 % ISO 527-2/5 Break 5 2.0 % ASTM D638 Break 2.0 % ISO 527-2/5 Flexural Modulus 50.0 mm Span 6 5200 MPa ASTM D790	Break	104 MPa	ISO 527-2/5
Yield 2.0 % ISO 527-2/5 Break ⁵ 2.0 % ASTM D638 Break 2.0 % ISO 527-2/5 Flexural Modulus 50.0 mm Span ⁶ 5200 MPa ASTM D790	Tensile Elongation		
Break ⁵ 2.0 % ASTM D638 Break 2.0 % ISO 527-2/5 Flexural Modulus 50.0 mm Span ⁶ 5200 MPa ASTM D790	Yield ⁵	2.0 %	ASTM D638
Break 2.0 % ISO 527-2/5 Flexural Modulus 50.0 mm Span ⁶ 5200 MPa ASTM D790	Yield	2.0 %	ISO 527-2/5
Break 2.0 % ISO 527-2/5 Flexural Modulus 50.0 mm Span ⁶ 5200 MPa ASTM D790	Break ⁵	2.0 %	ASTM D638
50.0 mm Span ⁶ 5200 MPa ASTM D790	Break	2.0 %	ISO 527-2/5
	Flexural Modulus		
	50.0 mm Span ⁶	5200 MPa	ASTM D790
		6100 MPa	ISO 178

Form No. TDS-31810-en





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Mechanical	Nominal Value Unit	Test Method
Flexural Stress		
7, 8	155 MPa	ISO 178
Yield, 50.0 mm Span ⁶	140 MPa	ASTM D790
Break, 50.0 mm Span ⁶	140 MPa	ASTM D790
Flexural Strain - at Break ⁹	3.0 %	ISO 178
Taber Abrasion Resistance		Internal Method
1000 Cycles, 1000 g, CS-17 Wheel	16.0 mg	
Impact	Nominal Value Unit	Test Method
Charpy Notched Impact Strength		
-30°C ¹⁰	4.0 kJ/m²	ISO 179/1eA
-30°C	5.0 kJ/m²	ISO 179/2C
0000 10	5.0 kJ/m²	ISO 179/1eA
23°C ¹⁰	5.0 KJ/III-	ISO 179/2C
Charpy Unnotched Impact Strength		
-30°C ¹⁰	20 kJ/m²	ISO 179/1eU
-30°C	24 kJ/m²	ISO 179/2U
23°C 10	25 kJ/m²	ISO 179/1eU
23°C	24 kJ/m²	ISO 179/2U
Notched Izod Impact		
-30°C	45 J/m	ASTM D256
0°C	45 J/m	ASTM D256
23°C	49 J/m	ASTM D256
-30°C ¹¹	5.0 kJ/m²	ISO 180/1A
0°C ¹¹	5.0 kJ/m²	ISO 180/1A
23°C ¹¹	5.0 kJ/m²	ISO 180/1A
Unnotched Izod Impact		
-30°C	280 J/m	ASTM D4812
23°C	500 J/m	ASTM D4812
-30°C ¹¹	20 kJ/m²	ISO 180/1U
23°C ¹¹	20 kJ/m²	ISO 180/1U
Hardness	Nominal Value Unit	Test Method
Rockwell Hardness (R-Scale)	120	ISO 2039-2
Ball Indentation Hardness (H 358/30)	218 MPa	ISO 2039-1
Thermal	Nominal Value Unit	Test Method
Deflection Temperature Under Load		
0.45 MPa, Unannealed, 3.20 mm	215 °C	ASTM D648
0.45 MPa, Unannealed, 4.00 mm, 100 mm Span ¹²	215 °C	ISO 75-2/Be
0.45 MPa, Unannealed, 4.00 mm, 64.0 mm Span ¹¹	210 °C	ISO 75-2/Bf
1.8 MPa, Unannealed, 3.20 mm	190 °C	ASTM D648
1.8 MPa, Unannealed, 4.00 mm, 100 mm Span ¹²	185 °C	ISO 75-2/Ae
1.8 MPa, Unannealed, 4.00 mm, 64.0 mm Span ¹¹	180 °C	ISO 75-2/Af
Vicat Softening Temperature		
	218 °C	ASTM D1525 ¹³ ISO 306/A50 ¹³
	199°C	ASTM D1525 ¹⁴ ISO 306/B120 ¹⁴
	198°C	ISO 306/B50
Ball Pressure Test (123 to 127°C)	Pass	IEC 60695-10-2

Thermal	Nominal Value Unit	Test Method
CLTE		ISO 11359-2
Flow: -40 to 40°C	2.8E-5 cm/cm/°C	
Flow: 23 to 80°C	3.5E-5 cm/cm/°C	
Flow: 23 to 150°C	2.6E-5 cm/cm/°C	
Transverse : -40 to 40°C	7.0E-5 cm/cm/°C	
Transverse : 23 to 80°C	9.5E-5 cm/cm/°C	
Transverse: 23 to 150°C	1.5E-4 cm/cm/°C	
Thermal Conductivity	0.19 W/m/K	ISO 8302
RTI Elec	120 °C	UL 746B
RTI Imp	120 °C	UL 746B
RTI Str	140 °C	UL 746B
Electrical	Nominal Value Unit	Test Method
	> 1.0E+15 ohms	IEC 60093
Surface Resistivity	> 1.0E+15 OHITIS	
Volume Resistivity	1.0E+15 ohms·cm	ASTM D257 IEC 60093
Dielectric Strength		A OTA D 4 4 0
0.800 mm, in Oil	29 kV/mm	ASTM D149 IEC 60243-1
1.60 mm, in Oil	25 kV/mm	ASTM D149
3.20 mm, in Oil	16 kV/mm	ASTM D149 IEC 60243-1
1.00 mm ¹⁵	19 kV/mm	IEC 60243-1
1.60 mm, in Oil	23 kV/mm	IEC 60243-1
Dielectric Constant		
1 MHz	3.40	ASTM D150
50 Hz	3.20	IEC 60250
60 Hz	3.20	IEC 60250
1 MHz	3.10	IEC 60250
Dissipation Factor		
1 MHz	0.016	ASTM D150
50 Hz	1.0E-3	IEC 60250
60 Hz	1.0E-3	IEC 60250
1 MHz	0.012	IEC 60250
Arc Resistance ¹⁶	PLC 6	ASTM D495
Comparative Tracking Index (CTI)	PLC 3	UL 746A
Comparative Tracking Index	1 20 3	IEC 60112
Comparative Tracking index	175 V	IEC 00112
Calutian D		
Solution B	150 V	III 74CA
High Amp Arc Ignition (HAI) 17	PLC 0	UL 746A
High Voltage Arc Resistance to Ignition (HVAR)	PLC 4	UL 746A
Hot-wire Ignition (HWI)	PLC 3	UL 746A
Flammability	Nominal Value Unit	Test Method
Flame Rating		UL 94
0.9 mm	V-0	
3.0 mm	5VA	
Glow Wire Flammability Index (1.0 mm)	960 °C	IEC 60695-2-12
Oxygen Index	31 %	ISO 4589-2
Fill Analysis	Nominal Value Unit	Test Method
Melt Viscosity (260°C, 1500 sec^-1)	105 Pa⋅s	ISO 11443
Additional Information	Nominal Value Unit	Test Method
Filler Content	17 %	ASTM D229



Injection	Nominal Value Unit	
Drying Temperature	110 to 120 °C	
Drying Time	2.0 to 4.0 hr	
Suggested Max Moisture	0.020 %	
Hopper Temperature	40 to 60 °C	
Rear Temperature	230 to 245 °C	
Middle Temperature	240 to 255 °C	
Front Temperature	245 to 265 °C	
Nozzle Temperature	240 to 260 °C	
Processing (Melt) Temp	250 to 270 °C	
Mold Temperature	40 to 100 °C	

Notes

¹ A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

² Typical propert	ies: these are	not to be	construed a	s specifications

2.	_		_	
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⁴ 5.0 mm/min

Form No. TDS-31810-en

⁵ Type I, 5.0 mm/min

^{6 1.3} mm/min

⁷ 2.0 mm/min

⁸ at Break

⁹ 2 mm/min

¹⁰ 80*10*4 sp=62mm

¹¹ 80*10*4 mm

¹² 120*10*4 mm

¹³ Rate A (50°C/h), Loading 1 (10 N)

¹⁴ Rate A (50°C/h), Loading 2 (50 N)

¹⁵ Shorttime

¹⁶ Tungsten Electrode

¹⁷ Surface

VALOX™ FR Resin DR48 - Europe

Polybutylene Terephthalate

SABIC



Where to Buy

Supplier

SABIC

Web: http://www.sabic.com/

Distributor

AECTRA

Telephone: +33-4-72-54-36-42 Web: https://www.aectra.fr/ Availability: Bulgaria, Romania

AGI-Augusto Guimarães & Irmão Telephone: +351-22753-7400 Web: https://www.agi.pt/en/ Availability: Portugal

GRÄSSLIN

Telephone: +49-7721-4040-261

Web: https://www.graesslin-kunststoffe.de

Availability: Germany

Guzmán Polymers

Telephone: +34-963-992-400

Web: https://www.guzmanglobal.com/en/productos/plastics/

Availability: Italy, Spain, Turkey

Lenorplastics

Telephone: +41-61-706-11-11 Web: https://www.lenorplastics.ch

Availability: Switzerland

Plastoplan

Telephone: +43-1-25040-0 Web: https://www.plastoplan.com/

Availability: Austria, Czech Republic, Hungary, Slovakia

POLYMIX

POLYMIX is a Pan European distribution company. Contact POLYMIX for availability of individual products by country.

Telephone: +33-3-8920-1380 Web: http://www.polymix.eu/

Availability: France

RESINEX Group

RESINEX is a Pan European distribution company. Contact RESINEX for availability of individual products by country.

Telephone: +32-14-672511 Web: http://www.resinex.com/

Availability: Europe

Ultrapolymers

Ultrapolymers is a Pan European distribution company. Contact Ultrapolymers for availability of individual products by country.

Telephone: +32-11-57-95-57 Web: http://www.ultrapolymers.com/

Availability: Belgium, Netherlands, South Africa



Form No. TDS-31810-en

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