

# Caps, Closures and Tubes

Properties	Physical		Mechanical							Thermal			Optical		Properties and Typical Customer Applications	Special additives**	
	Density	Melt Flow Rate	Tensile Modulus	Tensile Stress at Yield	Tensile Elong. at Yield	Charpy notched impact strength			Ductile/Brittle Temp.	Ball indentation hardness (H358/30)	Vicat Softening Temp.	Heat Deflect. Temp. HDT/B	Haze 1mm	Gloss at 60°			
TEST METHOD	23°C	230°C, 2.16kg				23°C	0°C	-20°C									
UNITS	g/cm <sup>3</sup>		MPa	MPa	%	kJ/m <sup>2</sup>			°C	MPa	°C	°C	°C	%	%		
<b>PP HOMO</b>																	
Moplen HP501H	0.9	2.1	1450	33	9	5.0	-	-	-	72	154	90	85	-	-	Good stiffness / impact balance at ambient temperatures; hinged closures	-
Moplen HP501L	0.9	6	1500	34	9	3.5	-	-	-	74	154	90	85	-	-	Good stiffness / impact balance at ambient temperatures; closures, pumps	-
Moplen HP548N	0.9	11	1700	36	9	2.5	-	-	-	78	154	94	95	-	-	Good stiffness / flowability balance; hinged and screw closures	NU, AS
Moplen HP483R	0.9	27	1400	32	9	2.0	-	-	-	68	151	85	80	-	-	Good stiffness and high flowability; low opening torque; closures, pumps	AS, SA
Moplen HP648T	0.9	53	1600	35	8	2.0	-	-	-	80	154	95	95	-	-	High fluidity and stiffness; closures, pumps	NU, AS
<b>PP HECO</b>																	
Moplen EP445L	0.9	6	1500	30	7	5.5	3.5	2.5	-25	64	151	80	100	-	-	Good stiffness / impact; beverages closures	NU, AS, SA
Moplen EP548P	0.9	16	1550	28	5	8.0	4.0	3.0	-45	69	147	70	100	-	-	Good stiffness / impact balance; closures	NU, AS
Moplen EP448T	0.9	48	1350	27	5	5.0	3.5	2.5	<-50	62	151	70	90	-	-	Good flowability and good impact / stiffness balance; closures	NU, AS
Moplen EP348U	0.9	70	1200	24	4	5.5	4.0	3.2	-45	50	150	65	92	-	-	Very high fluidity and good impact, good stiffness, low warpage; closures	NU, AS
Moplen EP549U	0.9	70	1260	23	4	9.0	6.0	5.0	-45	52	147	67	98	-	-	Excellent impact/stiffness balance and fluidity	NU, AS
<b>PP RACO</b>																	
Purell RP270G	0.9	1.8	950	25	14	6.0	2	-	-	47	134	68	67	-	95	Collapsible tube bodies	-
Moplen RP340N	0.9	11	1150	30	14	6.0	2	-	-	58	130	72	76	9	85	Good transparency; transparent closures	NU
Moplen RP348R	0.9	25	1150	30	14	6.0	3.0	-	-	60	130	72	76	9	85	Good transparency, high fluidity; transparent closures	NU, AS
Moplen RP398T	0.9	40	1050	28	14	4.5	2.5	-	-	55	127	70	70	9	85	Very high fluidity, good transparency, organoleptics, Transparent closures	NU, AS
<b>PP SPECIALTIES</b>																	
Adstif HA840R	0.9	20	2300	41	6	2.0	-	-	-	85	158	104	110	-	-	High stiffness; closures; sprayers	NU
Adstif EA648P	0.9	18	1700	32	5	5.5	3.0	2.5	-40	71	153	84	100	-	-	High crystallinity; high stiffness; closures	NU, AS
Clyrell RC449S	0.9	42	1250	30	11.5	4.0	1.5	-	-	-	126	75	75	6	137	Outstanding transparency, Good impact/stiffness balance	NU, AS
Clyrell RC549S	0.9	44	1470	34	10.5	2.5	1.2	-	-	-	135	84	86	10	128	Good Impact and Transparency; Closures, Sprayers	NU, AS
Clyrell EC340R	0.9	26	1180	23	12	6.0	3	2	-48	-	123	57	90	32	100	Good impact and transparency; closures, sprayers	NU
Adflex X500F	0.89	7.5	500	-	-	NB	NB	7 (-40)	-	-	94	-	60	-	-	Very soft grade; impact modifier, soft touch	-

(\*) FNCT (Full Notch Creep Test), 6MPa, 2% Arkopal, 50°C (\*\*) NU – nucleated AS – antistatic SA – slip agent AB – anti block

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Properties	Physical			Mechanical							Thermal		ESCR	Properties and Typical Customer Applications	Special additives**	
	Density	Melt Flow Rate		Tensile Modulus	Tensile Stress at Yield	Tensile Elong. at Yield	Charpy notched impact strength			Shore D hardness	Ball indentation hardness (H358/30)	Vicat Softening Temp.				FNCT (*)
	23°C	190°C, 2.16kg	190°C, 5kg				23°C	0°C	-20°C							
TEST METHOD	ISO 1183	ISO 1133		ISO 527	ISO 527	ISO 527	ISO 179			ISO 868	ISO 2039-1	ISO 306 /A50	ISO 306 /B50	internal method		
UNITS	g/cm <sup>3</sup>	g/10 min		MPa	MPa	%	kJ/m <sup>2</sup>				MPa	°C	°C	h		
<b>HDPE</b>																
<i>Purell</i> PE GF4750	0.950	0.4	1.5	1000	23	10	12	-	8 (-30)	60	44	-	70	65	High ESCR; good organoleptics; tube bodies and shoulders	-
<i>Hostalen</i> GF4750	0.950	0.4	1.5	1000	23	10	12	-	8 (-30)	60	44	-	70	65	High ESCR; good organoleptics; tube bodies and shoulders	-
<i>Hostalen</i> ACP 5331H	0.953	2.1	6.3	1150	30	10	-	-	5 (-30)	62	51	-	75	9	Good ESCR and organoleptics; multimodal grade; tube shoulders, beverage closures	-
<i>Purell</i> ACP 6541A	0.954	1.45	6.4	1100	22	10	11	-	4.5 (-30)	55	54	-	70	25	High ESCR, fluidity and organoleptics; multimodal grade; beverage closures	-
<i>Hostalen</i> ACP 6541A UV	0.954	1.45	6.4	1100	22	10	11	-	4.5 (-30)	55	54	-	70	25	High ESCR, fluidity and organoleptics; beverage closures	SA
<i>Hostalen</i> GD4755	0.953	1.9	6.0	1100	27	10	6	-	4.5 (-30)	62	51	-	75	8	Good balance of stiffness, toughness, ESCR and organoleptics. Beverage closures and engineering parts	-
<i>Purell</i> GC7260	0.960	8	23	1350	30	10	4	-	2.5 (-30)	64	57	-	72	2.5	High rigidity; good fluidity, organoleptics; beverage and water closures; tube shoulders	-
<i>Purell</i> GC7260G	0.960	8	23	1350	30	10	4	-	2.5 (-30)	64	57	-	72	2.5	High rigidity, good fluidity, organoleptic, enhanced thermal resistance; beverage and water closures; tube shoulders	-
<i>Purell</i> GB7250	0.952	10	28	1000	24	10	2.5	-	2.0 (-30)	61	46	-	64	2.5	Good fluidity; low warpage; organoleptics; beverage and water closures; tube shoulders	-
<b>LDPE</b>																
<i>Lupolen</i> 1800S	0.917	20	-	150	8	-	-	-	-	45	13	80	-	1.5 (ASTM)	Softness and high fluidity; special parts	-
<i>Purell</i> PE 1810E	0.920	0.4	-	200	9	-	-	-	-	45	16	92	-	-	Tube bodies and shoulders, closures	-
<i>Purell</i> PE 1840H	0.919	1.5	-	200	9	15	-	-	-	45	15	88	-	-	Tube bodies and shoulders, closures	-
<i>Lupolen</i> 1840D	0.919	0.25	-	200	9	-	-	-	-	45	15	93	-	-	Tube bodies and shoulders, closures	-
<i>Purell</i> 2410T	0.924	36	-	280	11	-	-	-	-	49	18	89	-	0.5 (ASTM)	Softness and very high fluidity; special parts	-
<i>Lupolen</i> 2420H	0.924	1.9	-	260	11	-	-	-	-	49	18	94	-	-	Tube bodies and shoulders, closures	-
<i>Lupolen</i> 2426H	0.924	1.9	-	260	11	-	-	-	-	49	18	94	-	-	Tube bodies and shoulders, closures	SA
<i>Purell</i> PE 3020K	0.927	4	-	300	13	-	-	-	-	51	21	97	-	-	High rigidity, good opticals and good chemical resistance; tube bodies and shoulders, closures	-
<i>Lupolen</i> 3026K	0.927	4	-	300	13	-	-	-	-	51	21	97	-	-	High rigidity, good opticals and good chemical resistance; tube bodies and shoulders, closures	SA, AB

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