


PUMA RESTRICTED SUBSTANCES LIST (RSL)

PUMA RSL Version 6.2014: page 1/2		CAS Number	UNIT	RL	TEST METHODS	Leather		Polymers					Textiles							
		Please refer to the handbook for chemical groups (e.g. chlorinated phenols, azo-dyes, etc.)		1 mg/kg = 1 ppm	Reporting Limit		Natural	Coated	EVA	PU, TPU, Latex, TPE, Composites, other plastics	PU-foam	Rubber	TPE	Natural fibres, e.g. cotton,	Mixed textiles, e.g. cotton/PES	Polyester	Polyamide; Polyacrylnitril	Natural fibres, wool	PU synthetics	
pH-value							3.5-7.0	3.5-7.0						4.0-7.0	4.0-7.0	4.0-7.0	4.0-7.0	4.0-7.0	4.0-7.0	4.0-7.0
Heavy Metals - Extractable																				
Arsenic - As	7440-38-2	mg/kg			Extraction in artificial acidic sweat solution according to ISO 105 E04										5.0	5.0			0.2	
Antimony - Sb	7440-36-0	mg/kg			EN ISO 17294-2 / EN ISO 11885															
Cadmium - Cd	7440-43-9	mg/kg					0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cobalt - Co (Adults/Children)	7440-48-4	mg/kg				4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	
Chromium - Cr	7440-47-3	mg/kg						2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lead - Pb	7439-92-1	mg/kg			see NOTE 3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Copper - Cu	7440-50-8	mg/kg				25	25							25	25	25	25	25	25	
Mercury - Hg	7439-97-6	mg/kg			EN ISO 17294-2			0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
Nickel - Ni (extractable) (Adults/Children)	7440-02-0	mg/kg									4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	
Nickel - Ni (as Ni release)	µg/cm2/week			<0,1	see NOTE 4															
Chromium VI - Cr VI	7440-47-3	mg/kg		<1	§ 64 LFGB B 82.02-11 / DIN EN ISO 17075	ND	ND													
Heavy Metals - Total Digestion																				
Cadmium - Cd- (Adults/Children)	7440-43-9	mg/kg			DIN EN 11885 or equivalent; Test method for cadmium according to EN112		75/50	75/50	75/50	75/50	75/50	75/50	75/50	75/50	75/50	75/50	75/50	75/50	75/50	
Lead - Pb-	7439-92-1	mg/kg					40	40	40	40	40	40	40	40	40	40	40	40	40	
Mercury - Hg	7439-97-6	mg/kg																		
Chromium VI - Cr VI-	7440-47-3	mg/kg																		
Organics																				
Chlorinated Phenols (Adults/Children)	multiple	mg/kg			GC/MS	<1	<1							<1	<1	<1	<1	<1		
Pentachlorophenol - PCP-	87-86-5	mg/kg	<0,05		see NOTE 5	0.05	0.05							0.05	0.05	0.05	0.05	0.05		
Tetrachlorophenol - TeCP	25167-83-3	mg/kg					0.5	0.5							0.5	0.5	0.5	0.5	0.5	
Trichlorophenol - TriCP-	multiple	mg/kg				0.5	0.5							0.5	0.5	0.5	0.5	0.5		
o-Phenyl-phenol (Adults/Children)	90-43-7	mg/kg			GC/MS	300/50	300/50							100/50	100/50				100/50	
α Pesticides	multiple	mg/kg			see NOTE 6	0.5	0.5							0.5	0.5				0.5	
Formaldehyde (Adults/Children)	50-00-0	mg/kg			see NOTE 7	20/16	20/16							16	16	16	16	16	16	
Aryl-amines from Azo dyes	multiple	mg/kg	<10		see NOTE 8	<20	<20		<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
Allergizing disperse dyes	multiple	mg/kg	<15		DIN 54231										ND	ND	ND	ND		
Imidazolidine-1-thione	96-45-7	mg/kg			LC-MS			100												
Short organic carriers	multiple	mg/kg			DIN 54232									1	1	1	1	1	1	
Σ Short-Chain Chlorinated Paraffins	multiple	mg/kg	<100		GC-ECD/ NCI, LC - MS	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	
Σ Phthalates	multiple	mg/kg	<30		see NOTE 9			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Flame Retardants	multiple	mg/kg	<5		see NOTE 10			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Organo Tin compounds																				
Monobutyl Tin-MBT-	multiple	mg/kg	<0,001		ISO 17353	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Dibutyl Tin-DBT-	multiple	mg/kg	<0,001				0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Tributyl Tin-TBT-	multiple	mg/kg	<0,001				0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
Σ (TeBT, DOT, MOT, TcYt, TPht)	multiple	mg/kg				1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Perfluorooctane sulfonate (PFOS)	multiple	µg/m²			LC/MS	1								1	1	1	1	1	1	
Perfluorooctanoic acid (PFOA)	335-67-1	µg/m²				1								1	1	1	1	1	1	
Perfluoro- un& di& tri& tetradecanoate	multiple	mg/kg				1								1	1	1	1	1	1	
Acetophenone & 2-phenyl-2-propanol	multiple	mg/kg			see NOTE 11		50													
Σ 24 PAH (Adults/Children)	multiple				ZEK 01.4-08		10/5	10/5	10/5	10/5				10/5	10/5	10/5	10/5	10/5	10/5	
Benzo(a & e)pyrene	50-32-8, 192-97-2	mg/kg			ZEK 01.4-08		1/0.5	1/0.5	1/0.5	1/0.5				1/0.5	1/0.5	1/0.5	1/0.5	1/0.5	1/0.5	
Benzo(b & j & k) fluoranthene	205-82-3, 205-99-2, 207-08-9	mg/kg			ZEK 01.4-08		1	1	1	1				1	1	1	1	1	1	
Benzo(a)anthracene	56-55-3	mg/kg			ZEK 01.4-08		1	1	1	1				1	1	1	1	1	1	
Chrysene	218-01-9	mg/kg			ZEK 01.4-08		1	1	1	1				1	1	1	1	1	1	
Dibenzo(a & h)anthracene	53-70-3	mg/kg			ZEK 01.4-08		1	1	1	1				1	1	1	1	1	1	
Alkylphenolethoxylates (APEOS)																				
Nonylphenol	multiple	mg/kg			GC-MS/ LC-MS	ND	ND							ND	ND	ND	ND	ND	ND	
Octylphenol	multiple	mg/kg					ND	ND							ND	ND	ND	ND	ND	ND
Σ Alkylphenolethoxylates (APEO) / Nonylphenolethoxylates (NPEO)	multiple	mg/kg					100	100							100	100	100	100	100	100
Dimethyl Fumarate (DMFu)		mg/kg	<0,1		see NOTE 12	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Solvents																				
Toluene	108-88-3	mg/kg			Headspace GC- MS		50	50	50	50	50	50							50	
Benzene	71-43-2	mg/kg					1	1	1	1	1	1								1
N,N - Dimethylformamide (DMF)	68-12-2	mg/kg			GC-MS		50	50	50	50	50	50							50	
1,2 - Dichloroethane	107-06-2	mg/kg			Headspace GC-MS	ND	ND	ND	ND	ND	ND	ND							ND	
Dichloromethane	75-09-2	mg/kg					5	5	5	5	5	5								5
m.o.p- Xylenes	95-47-6,	mg/kg					100	100	100	100	100	100								100
Phenol	108-95-2	mg/kg			GC-MS		50	50	50	50	50								50	

No CMR substances above 0.1% must be used **Products must not emit unusual odour** **ALL MATERIALS MUST BE PVC-FREE!**

NOTE ON RSL TABLE and TEST METHODS: (continued in page 2)

1. ND - Not Detectable

2. Blank or no value in the cell means not to be found in the product and NO testing is required

3. Heavy Metals - extraction in artificial acidic sweat solution according to ISO 105 E04; Antimony limit values apply for all materials made of polyester

4. Nickel Test Methods: (1) Test for simulation of wearing & corrosion - EN 12472:2005 (2) for articles with direct skin contact - Nickel release acc. to EN 1811:2011; and (3) DIN EN 16128 for spectacle frames, RL is 0,1 µg/cm²/week

5. Chlorinated Phenols - LFGB § 64 BVL B82.02.8, GC-ECD analysis (textile/leather) or ISO 17070 for leather only; for polyester/printed fabric is modified § 64 LFGB BVL B82.02.8


6. Pesticides - Test method is BVL L 00.00-34

7. Formaldehyde Test Methods : Leather - DIN EN 53315, ISO 17226; Textiles - DIN EN 14184, Japanese Law 112; **limit value for infants or babies is 0.5 mg/kg**

With this version of the RSL the PUMA MRSL is replaced by the ZDHC MRSL (please click this link: <http://www.roadmap2zero.com/programme-documents.php>)

If any question, please email RSL@puma.com and/or Edel (Edelberto.Anit@puma.com); Kathrin (Kathrin.Edress@puma.com).

PUMA RESTRICTED SUBSTANCES LIST (RSL)

PUMA RSL Version 6.2014: page 2/2	CAS Number	UNIT	Trims & Components										Labels & Packaging			Others	
			Laces, natural fibres, PES, PA, mixed fibers	Stockliner EVA foam	Stockliner rubber foam	Insoles, natural fibres	Insoles, synthetic fibres	Threads, Yarns, etc.	Wood	Inks and Dyes, Prints & Coatings	Accessories, metal parts	Care Labels, size labels, neck labels, etc.	Paper, cartons, hangtags	Polybag Packaging	Cement, Primer, etc.	Electronics products, e.g. audio, LED pack	
			4.0-7.0			4.0-7.0	4.0-7.0	4.0-7.0	4.0-7.0				4.0-7.0				
pH-value			n.a.														
Heavy Metals - Extractable																	
Arsenic - As	7440-38-2	mg/kg															
Antimony - Sb	7440-36-0	mg/kg	5.0														
Cadmium - Cd	7440-43-9	mg/kg	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				0.1	
Cobalt - Co (Adults/children)	7440-48-4	mg/kg	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0				4.0	
Chromium - Cr	7440-47-3	mg/kg	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				2.0	
Lead - Pb	7439-92-1	mg/kg	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				0.2	
Copper - Cu	7440-50-8	mg/kg	25	25	25	25	25	25	25	25	25	25				25	
Mercury - Hg	7439-97-6	mg/kg	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02				0.02	
Nickel - Ni (extractable) (Adults/children)	7440-02-0	mg/kg	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0	4.0/1.0				4.0/1.0	
Nickel - Ni (as Ni release)	µg/cm2/week	see NOTE 4														ND	
Chromium VI - Cr VI	7440-47-3	mg/kg															
Heavy Metals - Total Digestion																	
Cadmium - Cd (Adults/children)	7440-43-9	mg/kg	75/50	75/50	75/50	75/50	75/50	75/50	75/50	75/50	75/50	75/50				75	75
Lead - Pb	7439-92-1	mg/kg	40	40	40	40	40	40	40	40	40	40				40	40
Mercury - Hg	7439-97-6	mg/kg															100
Chromium VI - Cr VI	7440-47-3	mg/kg															100
Organics																	
Chlorinated Phenols																	
Pentachlorophenol - PCP	87-86-5	mg/kg	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	
Tetrachlorophenol - TeCP	25167-83-3	mg/kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Trichlorophenol - TrICP	multiple	mg/kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
o-Phenyl-phenol (Adults/children)	90-43-7	mg/kg	100/50	100/50	100/50	100/50	100/50	100/50	100/50	100/50	100/50	100/50	100/50	100/50	100/50	100/50	
Σ Pesticides	multiple	mg/kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Formaldehyde (Adult/children)	50-00-0	mg/kg	16	16	16	16	16	16	16	16	16	16	16	16	16	16	
Aryl-amines from Azo dyes	multiple	mg/kg	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
Allergizing disperse dyes	multiple	mg/kg	<15				<15	<15				<15					
Imidazolidine-1-thione	multiple	mg/kg	1				1	1				1					
Chloro organic carriers	multiple	mg/kg	1				1	1				1					
Σ Short-Chain Chlorinated Paraffins	multiple	mg/kg	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	
Σ Phthalates	multiple	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Flame Retardants	multiple	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Organo Tin compounds																	
Monobutyl Tin-MBT	multiple	mg/kg	1	1	1		1	1			1		1	1	1	1	
Dibutyl Tin-DBT	multiple	mg/kg	0.2	0.2	0.2		0.2	0.2			0.2		0.2	0.2	0.2	0.2	
Tributyl Tin-TBT	multiple	mg/kg	0.02	0.02	0.02		0.02	0.02			0.02		0.02	0.02	0.02	0.02	
Σ (TeBT, DOT, MOT, TCyT, TPHT)	multiple	mg/kg	1	1	1		1	1			1		1	1	1	1	
Perfluorooctane sulfonate (PFOS)	multiple	µg/m ²	1	1	1		1	1			1		1	1	1	1	
Perfluorooctanoic acid (PFOA)	335-67-1	µg/m ²	1	1	1		1	1			1		1	1	1	1	
Perfluoro- un& di& tri& tetradecanoate	multiple	mg/kg	1	1	1		1	1			1		1	1	1	1	
Acetophenone & 2-phenyl-2-propanol	multiple	mg/kg															
Σ 24 PAH	multiple	mg/kg	10/5		10/5		10/5				10/5					10/5	
Benzo(a & e)pyrene	50-32-8, 192-97-2	mg/kg	1/0.5		1/0.5		1/0.5				1/0.5					1/0.5	
Benzo(b & j & k) fluoranthene	205-82-3, 205-99-2, 207-08-9	mg/kg	1		1		1				1					1	
Benzo(a)anthracene	56-55-3	mg/kg	1		1		1				1					1	
Chrysene	218-01-9	mg/kg	1		1		1				1					1	
Dibenzo(a & h)anthracene	53-70-3	mg/kg	1		1		1				1					1	
Alkylphenolethoxylates (APEOS)																	
Nonylphenol	multiple	mg/kg	ND				ND	ND			ND		ND	ND	ND	ND	
Octylphenol	multiple	mg/kg	ND				ND	ND			ND		ND	ND	ND	ND	
Σ Alkylphenolethoxylates (APEO) / Nonylphenolethoxylates (NPEO)	multiple	mg/kg	100				100	100	100		100		100	100	100	100	
Dimethyl Fumarate (DMFu)	multiple	mg/kg	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Solvents																	
Toluene	108-88-3	mg/kg		50	50						100					100	50
Benzene	71-43-2	mg/kg		1	1						5					5	1
N,N - Dimethylformamide (DMF)	68-12-2	mg/kg		50	50						100					100	50
1,2 - Dichloroethane	107-06-2	mg/kg		ND	ND						ND					ND	ND
Dichloromethane	75-09-2	mg/kg		5	5						5					5	5
m.o.p - Xylenes	95-47-6	mg/kg		100	100						500					500	100
Phenol	108-95-2	mg/kg		50	50						100					100	50
No CMR substances above 0.1% must be used			Products must not emit unusual odour					ALL MATERIALS MUST BE PVC-FREE!									
NOTE ON RSL TABLE and TEST METHODS: (continued...)																	
8. Azo dyes Test Methods : Leather - EN ISO 17234-1:2010 or § 64 LFGB, BVL B 82.02-3 (V):2004; Textiles - EN ISO 14362-1:2012 or § 64 LFGB, BVL B 82.02-2:2013; for 4-Aminoazobenzene - Leather - EN ISO 17234-2:2011 or § 64 LFGB, BVL B 82.02-9:2008; Textile - EN ISO 14362-3:2012 or § 64 LFGB, BVL B 82.02-15:2013																	
9. Phthalates - DEHP, DIDP, BBP, DNOP, DBP, DINP, DIBP, DPP, DnHP, DMEP, DIPP, NPIP, 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP), 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters, Dibenzenedicarboxylic acid, dipentylester, branched and linear (DHNUP); Test Method is GC-MS, Reporting limit for DINP, DIDP and DHNUP is 100 mg/kg (each), Reporting Limit for all others is 30 mg/kg																	
10. Flame Retardants - PBB, TRIS, TEPA, Penta/Octa/DecaBDE, HBCDD, SCCP/TCEP; TDCCP: Test Method is by GC-MS/LC-MS; for plastics the method is DIN EN 16377 after cryo-grinding with liquid nitrogen.																	
11. Test Method for Acetophenone and 2P-2P - solvent extraction GCMS/ GCMS/ HPLC; limit value for each is 50 mg/kg.																	
12. Test method for DMFu is extraction in acetone followed by GC/M S; for footwear materials the new test method is CEN ISO/TS 16186:2012																	
13. Usage ban in production process for Toluene, Benzene, Chloroform, 1,2 Dichloroethane, Dichloromethane, m.o.p.-Xylene, Tetrachloroethylene and Trichloroethylene																	
With this version of the RSL the PUMA MRSL is replaced by the ZDHC MRSL (please click this link: http://www.roadmap2020.com/programme-documents.php)																	
If any question, please email RSL@puma.com and/or Edel (Edelberto.Anit@puma.com); Kathrin (Kathrin.Endress@puma.com).																	