

**HUNTSMAN**

Enriching lives through innovation

IROGRAN®

**Thermoplastic Polyurethanes**

For the wire  
and cable industry



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Grades			A 80 P 5039	A 85 P 4394	A 92 P 4207	A 92 P 4637	A 95 P 5044
Special Characteristics			standard	standard	standard	standard	standard
UL94 Flammability Rating			HB*1	HB*1	HB*1	HB*1	HB*1
Physical Properties	Norm	Unit					
	Hardness, Shore A	ISO 868 D-2240	Shore A	80	85	92	92
80				85	92	92	95
Hardness, Shore D	ISO 868 D-2240	Shore D	29	36	40	39	51
			29	36	40	39	51
Tensile Strength	DIN 53504 D-412	Mpa psi	32	45	49	45	62
			3500	5075	5300	4870	8200
100% Modulus	DIN 53504 D-412	Mpa psi	4,6	7,0	9,5	9,1	12,0
			700	1015	1400	1300	1600
300% Modulus	DIN 53504 D-412	Mpa psi	1300	12,0	16,6	15,9	32,0
			8,7	1740	2280	2050	4000
Elongation @ break	DIN 53504 D-412	% %	720	640	570	600	460
			760	610	640	670	470
Tear Resistance	ISO 34-1 D-624	N/mm pli	45	60	75	74	101
			480	574	570	660	600
Abrasion	ISO 4649 D-5963	mm <sup>3</sup> in <sup>3</sup>	30	25	25	30	30
			0,0018	0,0015	0,0015	0,0018	0,0018
Compression Set, 70h 23°C	ISO 815 D-395	% %	23	20	28	25	30
			23	20	28	25	30
Compression Set, 24h 70°C	ISO 815 D-395	% %	43	40	44	41	82
			43	40	44	41	82
Density	ISO 1183-1 D-792	kg/m <sup>3</sup> kg/m <sup>3</sup>	1,1	1,12	1,14	1,13	1,14
			1,1	1,12	1,14	1,13	1,14
Thermal Melt Range Low	Huntsman Huntsman	°C °F	145	150	165	160	175
			295	300	330	320	347
Thermal Melt Range High	Huntsman Huntsman	°C °F	155	170	188	170	187
			310	340	370	338	369
Limiting Oxygen Index (LOI)	ASTM D2863	%	N/A	N/A	N/A	N/A	N/A

\*HFFR = Halogen Free Flame Retardant

\*1 internal testing

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A 80 P 4699	A 85 P 4441	A 92 P 4851	A 78 P 4766	A 85 P 4350	A 85 P 4380	A 85 P 4854	A 89 P 5012 FR DP	A 95 P 5003 FR	A 85 P 4666	A 85 P 4944
matt	matt	matt	HFFR	HFFR	HFFR, matt	HFFR, matt	HFFR	HFFR	x-linkable	Hi Temp
HB*1	HB*1	HB*1	V0	V2	V2	V0	V0*1	V0*1	V2*1	HB*1
80 80	87 87	93 93	82 82	86 86	87 87	83 83	90 90	94 94	84 84	87 87
31 31	38 38	42 42	30 30	35 35	36 36	33 33	37 37	42 42	31 31	38 38
34 4600	40 4400	45 5200	30 4000	40 4600	35 3200	25 3340	30 3470	14 1740	35 3200	40 4400
4,0 610	7,3 1100	10,0 1450	5,2 840	6,5 990	6,5 1015	3,5 810	8,6 1350	7,9 1250	5,7 890	7,3 1100
7,0 930	11,0 1600	16,1 2100	8,0 1400	10,2 1500	10,0 1450	7,5 1250	13,0 1910	10,0 1400	9,0 1400	11,0 1600
670 660	650 700	600 640	700 610	680 660	600 610	670 650	500 500	520 550	720 730	650 700
76 420	60 560	75 640	40 410	50 490	50 460	35 390	65 600	60 440	45 450	60 560
40 0,0024	35 0,0021	35 0,0021	40 0,0024	35 0,0021	35 0,0021	40 0,0024	35 N/A	110 0,0067	45 0,0027	35 0,0021
24 24	24 24	27 27	20 20	40 40	25 25	30 30	N/A N/A	N/A N/A	25 25	24 24
42 42	42 42	45 45	36 36	42 42	45 45	46 46	N/A N/A	N/A N/A	42 42	42 42
1,10 1,10	1,11 1,11	1,13 1,13	1,16 1,16	1,15 1,15	1,14 1,14	1,14 1,14	1,24 1,24	1,25 1,25	1,15 1,15	1,11 1,11
127 261	155 311	160 320	165 330	171 340	159 318	125 260	165 330	160 320	155 311	155 311
156 313	175 347	171 340	190 375	190 375	180 356	160 320	185 365	175 345	170 338	175 347
N/A	N/A	N/A	25 - 27	26-27	26,7	25,4	N/A	> 30	N/A	N/A

## IROGRAN® creating connections



Huntsman Polyurethanes is committed to working closely with its customers and can offer a fast and flexible response to your needs. We offer direct links to our laboratories with full technical backup. Commercial support and dedicated customer service is available throughout Europe, the Middle East, Asia-Pacific and the Americas.

### European Headquarters

Tel.: +49 541 9141-0

Fax: +49 541 9141-395

TPU\_EAME@huntsman.com

[www.huntsman.com/tpu](http://www.huntsman.com/tpu)

### About Huntsman:

Huntsman Corporation is a publicly traded global manufacturer and marketer of differentiated chemicals with 2014 revenues of approximately \$13 billion including the acquisition of Rockwood's performance additives and TIO2 businesses. Our chemical products number in the thousands and are sold worldwide to manufacturers serving a broad and diverse range of consumer and industrial end markets. We operate more than 100 manufacturing and R&D facilities in more than 30 countries and employ approximately 16,000 associates within our 5 distinct business divisions. For more information about Huntsman, please visit the company's website at [www.huntsman.com](http://www.huntsman.com).

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### Sales locations:

#### AMERICAS

Huntsman

2190 Executive Hills Blvd.

USA - Auburn Hills, MI 48326

Tel.: +1 248-322-7496

Fax: +1 248-322-7303

e-mail: [TPU\\_AMERICAS@huntsman.com](mailto:TPU_AMERICAS@huntsman.com)

#### EUROPE

Huntsman (Germany) GmbH

Hafenringstraße 1

D - 49090 Osnabrück

Tel.: +49 541 9141-0

Fax: +49 541 9141-395

e-mail: [TPU\\_EAME@huntsman.com](mailto:TPU_EAME@huntsman.com)

#### ASIA

Huntsman Chemistry R & D Center (Shanghai) CO., LTD

455 Wenjing Road

Minhang Economic & Technological Development Zone,  
200245 Shanghai, P.R. China

Tel: +86-21-3357 6588

Fax: +86-21-3357 6547

e-mail: [TPU\\_APAC@huntsman.com](mailto:TPU_APAC@huntsman.com)