

hapflexTM

by hapco inc.

- 500 Series
- 600 Series
- 700 Series
- 800 Series
- 1000 Series



high performance hybrid elastomeric polymer alloys

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HAPFLEX SERIES

HARDNESS SCALE

Shore A	HAPFLEX Product #	
20 A	1021	
35 A	1036 / 1036-5	
45 A	540 / 540-3	543
	541 / 541-3	
55 A	1056 / 1056-5	
60 A	560 / 560-6	
	561 / 561-6	564
65 A	565 / 565-3	765 / 765-5
	566 / 566-3	766 / 766-5
70 A	570 / 570-6	573
	571 / 571-6	
80 A	580 / 580-3	780 / 780-5
	581 / 581-3	781 / 781-5
90 A	790 / 790-5	791 / 791-5
95 A	595 / 595-3	598 / 598-3
	596 / 596-3	599

Shore D	HAPFLEX Product #	
50 D	650 / 650-3	651 / 651-3
60 D	660 / 660-3	663 / 663-3
	661 / 661-3	
65 D	665 / 665-3	668 / 668-3
	666 / 666-3	669 / 669-3
70 D	670 / 670-3	870 / 870-4
	671 / 671-3	871 / 871-4
	673 / 673-3	873 / 873-4

GENERAL HARDNESS COMPARISONS

Rubber band	Computer mouse pad	Rubber stamp	Inner tube	Pencil eraser	Auto tire tread	Leather Belt	Running shoe sole	Phone cord / tap washer	Skateboard wheel	Pipe Stem	Textbook cover	Golf ball	Office desktop	Telephone / Wooden ruler	Fountain pen	Computer casings	Bowling ball	Bone
20 A	30 A	40 A	50 A	60 A	70 A	80 A	90 A	100 A		40 D	50 D	60 D	70 D	80 D	90 D			
SHORE A										SHORE D								

HAPFLEX SERIES APPLICATIONS

Abrasive resistant linings
Assembly fixtures
Bending fixtures
Contour trim line & checking fixtures
Contour tracing masters
Core gluing fixtures
Die cutting surfaces
Drilling fixtures
Duplicate models
Drop forge/hammer dies
Figurines molds
Forming dies
Forming fixtures
Foundry:
 patterns, core boxes, sprues,
 gates, runners, & blow tubes
Gaskets
Gluing fixtures
Grinding fixtures
Holding fixtures
Liquid models molds
Liquid molded parts
Machining nests
Match metal die molds
Medical training models
Models
Molds for Liquid Molding
Molds for epoxy
Molds for polyester casting
Molds for urethane casting
Molds for silicone
Open cast molding
Parts
Paper forming dies
Paper-pulp molds
Plaster molds
Post forming dies/fixtures
Powdered metal forming molds
Precast cement form liners
Precast cement molds
Pressure cast molds
Pressure forming assists
Robotic fixtures
Roller covers & rollers
Router blocks
Rubber prototype parts
Sandblasting fixtures
Sculpture molds
Stamping pads
Steel rule ejectors
Stretch forming dies
Thermoforming assists
Tracing masters
Tube bending & fixtures
Vacuum casting molds
Wax molds

HAPFLEX 500 SERIES

The **Hapflex 500 Series** offers soft durometer elastomers ranging from 45 - 95 Shore A. All are relatively fast, room curing, flexible systems that can be accelerated with moderate heat for faster cycle times. Most **500 Series** products are available in a slower speed (20-45 min.) when hand mixing, or a faster speed (3-6 min.) for use with Hapco's dispensing equipment.

All **Hapflex** elastomers are medium-low viscosity, making them easy to handle and pour, yet still provide precise duplications of surface details.

In addition, the **Hapflex** elastomers are virtually shock resistant and unbreakable, making them exceptionally well suited for permanent molds or parts that will not crack or chip during use or storage. A major advantage its performance in low temperatures.

Precision tracing patterns, instrument grips, gaskets, fixtures, and flexible parts and molds are just a few applications of the **Hapflex 500 Series**.

HAPFLEX 500 SERIES IN ACTION



Hapflex 599
-Plaque Mold-



Hapflex 561
-Complex Part Mold-



Hapflex 565
-Measuring Cup Mold-



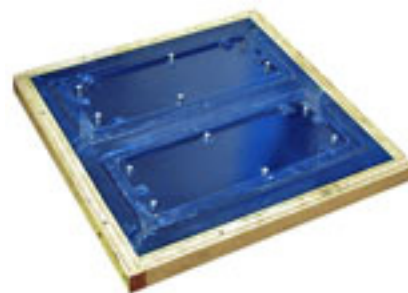
Hapflex 598
-Flexible Seal-



Hapflex 541
-Dive Helmet Mold-



Hapflex 573
-Frankenstein Mold-



Hapflex 598
-Filter Plate Mold-



Hapflex 581
-Tension Springs-

HAPFLEX 500 SERIES

PHYSICAL PROPERTIES		TEST METHOD	540 540-3	541 541-3	543	560 560-6	561 561-6	564
PHYSICAL PROPERTIES	Mix Ratio by volume A:B	Calculation	100:50	100:50	100:50	100:50	100:50	100:50
	by weight A:B		100:50	100:50	100:50	100:55	100:55	100:55
	Gel time 100 grams @ 25°C	ASTM D-2971	20 min. 3 min.	20 min. 3 min.	20 min.	45 min. 6 min.	45 min. 6 min.	45 min.
	Color (cured)	Visual	Black	Clear Amber	Green	Black	Clear Amber	Grey
	Hardness Shore	ASTM D-2240	45 A	45 A	45 A	60 A	60 A	60 A
	Viscosity mixed @ 25°C cps	ASTM D-4878	1,280	1,280	1,280	2,250	2,250	2,250
	Specific Gravity mixed @ 25°C	ASTM D-4669	1.01	1.01	1.01	1.06	1.06	1.06
	Shrinkage inch/inch See shrinkage paragraph	ASTM D-2566	.002-.003	.002-.004	.002-.003	.002-.004	.002-.004	.002-.003
	Demold time @ 70°F 1/8" thick	HAPCO TEST	18-24 hrs. 1-2 hrs.	18-24 hrs. 1-2 hrs.	18-24 hrs.	16-24 hrs. 1-2 hrs.	16-24 hrs. 1-2 hrs.	16-24 hrs.
	Weight per cubic inch (lbs.)	Calculation	0.0365	0.0365	0.0365	0.0383	0.0383	0.0383
PRODUCT PROPERTIES	Tensile Strength (psi)	ASTM D-638	500	500	500	1300	1300	1300
	Elongation %	ASTM D-638	610	610	610	600	600	600
	Tear Strength (pli)	ASTM 624 Die C	70	70	70	86	86	86
	Modulus of Elasticity psi (000)	ASTM D-638	0.30	0.30	0.30	0.43	0.43	0.43
	Izod Impact (ft.lbs/in.) notched unnotched	ASTM D-256	No Break	No Break	No Break	No Break	No Break	No Break
	Heat Distortion Temperature (°C) 66 psi 264 psi	ASTM D-648	NA	NA	NA	NA	NA	NA
	Flexural Strength (psi)	ASTM D-790	NA	NA	NA	NA	NA	NA
	Flexural Modulus psi (000)	ASTM D-790	NA	NA	NA	NA	NA	NA
Available in Flame Retardant (FR)	UL 94V	Yes	Yes	No	No	No	No	

NOTE: Before use, reference material handling, processing, and safety notes located at the end of this brochure

HAPFLEX 500 SERIES

PHYSICAL PROPERTIES		TEST METHOD	565 565-3	566 566-3	570 570-6	571 571-6	573
PHYSICAL PROPERTIES	Mix Ratio by volume A:B	Calculation	100:100	100:100	100:40	100:40	100:40
	by weight A:B		100:100	100:100	100:40	100:40	100:40
	Gel time 100 grams @ 25°C	ASTM D-2971	20 min. 3 min.	20 min. 3 min.	40 min. 6 min.	40 min. 6 min.	40 min.
	Color (cured)	Visual	Black	Clear Amber	Black	Clear Amber	Orange
	Hardness Shore	ASTM D-2240	65 A	65 A	70 A	70 A	70 A
	Viscosity mixed @ 25°C cps	ASTM D-4878	670	670	3,900	3,900	3,900
	Specific Gravity mixed @ 25°C	ASTM D-4669	1.05	1.05	1.07	1.07	1.07
	Shrinkage inch/inch See shrinkage paragraph	ASTM D-2566	.002-.004	.002-.004	.002-.003	.002-.003	.002-.003
	Demold time @ 70°F 1/8" thick	HAPCO TEST	4-6 hrs. 30- 60 min.	4-6 hrs. 30- 60 min.	8-12 hrs. 2-4 hrs.	8-12 hrs. 2-4 hrs.	8-12 hrs.
	Weight per cubic inch (lbs.)	Calculation	0.0379	0.0379	0.0386	0.0386	0.0386
PRODUCT PROPERTIES	Tensile Strength (psi)	ASTM D-638	900	900	1,900	1,900	1,900
	Elongation %	ASTM D-638	500	500	575	575	575
	Tear Strength (pli)	ASTM 624 Die C	82	82	142	142	142
	Modulus of Elasticity psi (000)	ASTM D-638	0.60	0.60	0.60	0.60	0.60
	Izod Impact (ft.lbs/in.) notched unnotched	ASTM D-256	No Break	No Break	No Break	No Break	No Break
	Heat Distortion Temperature (°C) 66 psi 264 psi	ASTM D-648	NA	NA	NA	NA	NA
	Flexural Strength (psi)	ASTM D-790	NA	NA	NA	NA	NA
	Flexural Modulus psi (000)	ASTM D-790	NA	NA	NA	NA	NA
Available in Flame Retardant (FR)	UL 94V	Yes	Yes	No	No	No	

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HAPFLEX 500 SERIES

PHYSICAL PROPERTIES	TEST METHOD	580	581	595	596	598	599	
		580-3	581-3	595-3	596-3	598-3		
PHYSICAL PROPERTIES	Mix Ratio by volume A:B	Calculation	100:70	100:70	100:50	100:50	100:50	100:50
	by weight A:B		100:70	100:70	100:50	100:50	100:50	100:50
	Gel time 100 grams @ 25°C	ASTM D-2971	40 min. 3 min.	40 min. 3 min.	45 min. 3 min.	45 min. 3 min.	45 min. 3 min.	45 min.
	Color (cured)	Visual	Black	Clear Amber	Black	Clear Amber	Clear Blue	Grey
	Hardness Shore	ASTM D-2240	83 A	83 A	95 A	95 A	95 A	95 A
	Viscosity mixed @ 25°C cps	ASTM D-4878	1,120	1,120	1,850	1,850	1,850	1,850
	Specific Gravity mixed @ 25°C	ASTM D-4669	1.06	1.06	1.06	1.06	1.06	1.06
	Shrinkage inch/inch See shrinkage paragraph	ASTM D-2566	.002-.003	.002-.003	.002-.003	.002-.003	.002-.003	.002-.003
	Demold time @ 70°F 1/8" thick	HAPCO TEST	7-10 hrs. 1-2 hrs.	7-10 hrs. 1-2 hrs.	5-8 hrs. 20- 40 min.	5-8 hrs. 20- 40 min.	5-8 hrs. 20- 40 min.	5-8 hrs.
	Weight per cubic inch (lbs.)	Calculation	0.0383	0.0383	0.0383	0.0383	0.0383	0.0383
PRODUCT PROPERTIES	Tensile Strength (psi)	ASTM D-638	1,500	1,500	2,700	2,700	2,700	2,700
	Elongation %	ASTM D-638	400	400	375	375	375	375
	Tear Strength (pli)	ASTM 624 Die C	178	178	236	236	236	236
	Modulus of Elasticity psi (000)	ASTM D-638	1.5	1.5	4.3	4.3	4.3	4.3
	Izod Impact (ft.lbs/in.) notched unnotched	ASTM D-256	No Break	No Break	No Break	No Break	No Break	No Break
	Heat Distortion Temperature (°C) 66 psi 264 psi	ASTM D-648	NA	NA	NA	NA	NA	NA
	Flexural Strength (psi)	ASTM D-790	NA	NA	NA	NA	NA	NA
	Flexural Modulus psi (000)	ASTM D-790	NA	NA	NA	NA	NA	NA
Available in Flame Retardant (FR)	UL 94V	Yes	Yes	Yes	Yes	No	No	

NOTE: Before use, reference material handling, processing, and safety notes located at the end of this brochure

HAPFLEX 600 SERIES

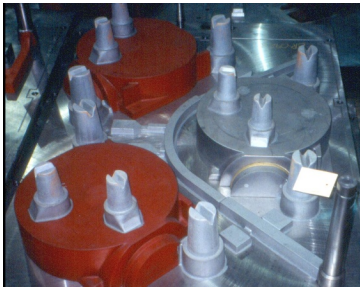
The **Hapflex 600** series are relatively fast, semi-rigid, room temperature curing systems. The **600 Series** yields harder durometers ranging from 50 - 70 Shore D. Most **600 Series** products are offered in 2 speeds: a standard 20-25 minute working time, and a 3-6 minute working time for fast de-mold.

The **Hapflex 600 Series** elastomers have a low viscosity, making them easy to process and able to provide precise duplications of surface details. All Hapflex products can be used with Hapco's **RAPIDFIL** or **MINIFIL** dispensing machines.

In addition, the **Hapflex 600 Series** elastomers are virtually shock resistant and unbreakable, making them exceptionally well suited for permanent molds, parts or master patterns that will not crack or chip during use. A major advantage of the **Hapflex 600 Series** is their superior abrasion resistance. Hapflex materials "wear like iron."

Living hinges, protective coverings, fixtures, forming dies, bending tools, foundry patterns and core boxes are just a few examples of **600 Series** applications.

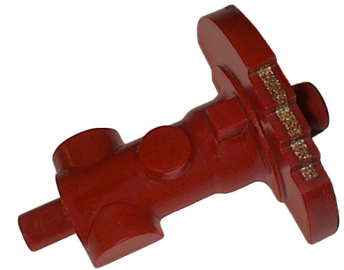
HAPFLEX 600 SERIES IN ACTION



Hapflex 673
-Production Pattern-



Hapflex 665 and 663
- Dual Durometer Putter
Prototype -



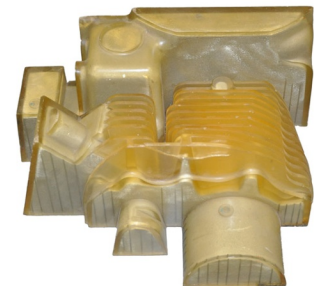
Hapflex 668 with Fill-It Core
- Foundry Pattern -



Hapflex 668
- Assembly Fixture -



Hapflex 670 & 671
- Metal Forming Dies -



Hapflex 661
-Complex Part Encapsulation-

HAPFLEX 600 SERIES

PHYSICAL PROPERTIES	TEST METHOD	650	651	660	661	663	
		650-3	651-3	660-3	661-3	663-3	
PHYSICAL PROPERTIES	Mix Ratio by volume A:B	Calculation	100:80	100:80	100:55	100:55	100:55
	by weight A:B		100:85	100:85	100:60	100:60	100:60
	Gel time 100 grams @ 25°C	ASTM D-2971	25 min. 3 min.	25 min. 3 min.	25 min. 3 min.	25 min. 3 min.	25 min. 3 min.
	Color (cured)	Visual	Black	Clear Amber	Black	Clear Amber	Red
	Hardness Shore	ASTM D-2240	50 D	50 D	60 D	60 D	60 D
	Viscosity mixed @ 25°C cps	ASTM D-4878	870	870	1,560	1,560	1,560
	Specific Gravity mixed @ 25°C	ASTM D-4669	1.03	1.03	1.04	1.04	1.04
	Shrinkage inch/inch See shrinkage paragraph	ASTM D-2566	.001- .003 .003- .005	.001- .003 .003- .005	.001- .003 .003- .005	.001- .003 .003- .005	.001- .003 .003- .005
	Demold time @ 70°F 1/8" thick	HAPCO TEST	2-5 hrs. 20- 35 min.	2-5 hrs. 20- 35 min.	2-5 hrs. 20- 35 min.	2-5 hrs. 20- 35 min.	2-5 hrs. 20- 35 min.
	Weight per cubic inch (lbs.)	Calculation	0.0372	0.0372	0.0375	0.0375	0.0375
PRODUCT PROPERTIES	Tensile Strength (psi)	ASTM D-638	2,100	2,100	2,800	2,800	2,800
	Elongation %	ASTM D-638	275	275	225	225	225
	Tear Strength (pli)	ASTM 624 Die C	356	356	420	420	420
	Modulus of Elasticity psi (000)	ASTM D-638	19	19	20	20	20
	Izod Impact (ft.lbs/in.) notched unnotched	ASTM D-256	1.4 4.4	1.4 4.4	2.2 No Break	2.2 No Break	2.2 No Break
	Heat Distortion Temperature (°C) 66 psi 264 psi	ASTM D-648	106°C NA	106°C NA	96°C 63°C	96°C 63°C	96°C 63°C
	Flexural Strength (psi)	ASTM D-790	840	840	1,660	1,660	1,660
	Flexural Modulus psi (000)	ASTM D-790	11.7	11.7	24.6	24.6	24.6
Available in Flame Retardant (FR)	UL 94V	Yes	Yes	Yes	Yes	No	

NOTE: Before use, reference material handling, processing, and safety notes located at the end of this brochure

HAPFLEX 600 SERIES

PHYSICAL PROPERTIES	TEST METHOD	665	666	668	669	
		665-3	666-3	668-3	669-3	
PHYSICAL PROPERTIES	Mix Ratio by volume A:B	Calculation	100:50	100:50	100:50	100:50
	by weight A:B		100:50	100:50	100:50	100:50
	Gel time 100 grams @ 25°C	ASTM D-2971	25 min. 3 min.	25 min. 3 min.	25 min. 3 min.	25 min. 3 min.
	Color (cured)	Visual	Black	Clear Amber	Red	Grey
	Hardness Shore	ASTM D-2240	65 D	65 D	65 D	65 D
	Viscosity mixed @ 25°C cps	ASTM D-4878	2,550	2,550	2,550	2,550
	Specific Gravity mixed @ 25°C	ASTM D-4669	1.1	1.1	1.1	1.1
	Shrinkage inch/inch See shrinkage paragraph	ASTM D-2566	.001- .003 .003- .005	.001- .003 .003- .005	.001- .003 .003- .005	.001- .003 .003- .005
	Demold time @ 70°F 1/8" thick	HAPCO TEST	1-2 hrs. 10- 20 min.	1-2 hrs. 10- 20 min.	1-2 hrs. 10- 20 min.	1-2 hrs. 10- 20 min.
Weight per cubic inch (lbs.)	Calculation	0.0368	0.0368	0.0368	0.0368	
PRODUCT PROPERTIES	Tensile Strength (psi)	ASTM D-638	3,300	3,300	3,300	3,300
	Elongation %	ASTM D-638	100	100	100	100
	Tear Strength (pli)	ASTM 624 Die C	450	450	450	450
	Modulus of Elasticity psi (000)	ASTM D-638	25	25	25	25
	Izod Impact (ft.lbs/in.) notched unnotched	ASTM D-256	2.2 No Break	2.2 No Break	2.2 No Break	2.2 No Break
	Heat Distortion Temperature (°C) 66 psi 264 psi	ASTM D-648	110°C 71°C	110°C 71°C	110°C 71°C	110°C 71°C
	Flexural Strength (psi)	ASTM D-790	2,700	2,000	2,700	2,700
	Flexural Modulus psi (000)	ASTM D-790	41.0	41.0	41.0	41.0
	Available in Flame Retardant (FR)	UL 94V	Yes	Yes	No	No

NOTE: Before use, reference material handling, processing, and safety notes located at the end of this brochure

HAPFLEX 600 SERIES

PHYSICAL PROPERTIES	TEST METHOD	670	671	673	
		670-3	671-3	673-3	
PHYSICAL PROPERTIES	Mix Ratio by volume A:B	Calculation	100:60	100:60	100:60
	by weight A:B		100:65	100:65	100:65
	Gel time 100 grams @ 25°C	ASTM D-2971	18 min. 3 min.	18 min. 3 min.	18 min. 3 min.
	Color (cured)	Visual	Black	Clear Amber	Red
	Hardness Shore	ASTM D-2240	70 D	70 D	70 D
	Viscosity mixed @ 25°C cps	ASTM D-4878	2,000	2,000	2,000
	Specific Gravity mixed @ 25°C	ASTM D-4669	1.06	1.06	1.06
	Shrinkage inch/inch See shrinkage paragraph	ASTM D-2566	.001- .003 .003- .005	.001- .003 .003- .005	.001- .003 .003- .005
	Demold time @ 70°F 1/8" thick	HAPCO TEST	1-2 hrs. 10- 20 min.	1-2 hrs. 10- 20 min.	1-2 hrs. 10- 20 min.
	Weight per cubic inch (lbs.)	Calculation	0.0383	0.0383	0.0383
PRODUCT PROPERTIES	Tensile Strength (psi)	ASTM D-638	4,680	4,680	4,680
	Elongation %	ASTM D-638	87	87	87
	Tear Strength (pli)	ASTM 624 Die C	660	660	660
	Modulus of Elasticity psi (000)	ASTM D-638	54.5	54.5	54.5
	Izod Impact (ft.lbs/in.) notched unnotched	ASTM D-256	2.3 No Break	2.3 No Break	2.3 No Break
	Heat Distortion Temperature (°C) 66 psi 264 psi	ASTM D-648	133°C 124°C	133°C 124°C	133°C 124°C
	Flexural Strength (psi)	ASTM D-790	3,710	3,710	3,710
	Flexural Modulus psi (000)	ASTM D-790	57.0	57.0	57.0
	Available in Flame Retardant (FR)	UL 94V	Yes 94V-1	Yes 94V-1	No

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HAPFLEX 700 & 800 SERIES

Hapflex 700 & 800 products are a series of low hazard, colorless, high strength, elastomers available in Shore hardnesses from 65A to 72D. **Hapflex 700 & 800** products exhibit high tensile strength, high tear strength, and excellent elongation. All **Hapflex 700 & 800** products cure at room temperature and can be accelerated with heat.

Another key attribute of the **700 & 800 Series** is that the base color of all components is colorless with no amber or yellow tint. These products are available in a 20 minute and 5 minute gel time for hand mixing or use with equipment. The fast and regular versions can be blended to customize the gel time without the addition of heat. All **700 & 800 Series** products are available in their natural colorless state or black.

Hapflex 700 & 800 Series can be used for mechanical, electrical, and many Liquid Molding applications. In addition, these materials show superior water immersion properties and superior adhesion when used in combination with Hapco's **PRIMER 200**.

HAPFLEX 700 & 800 SERIES IN ACTION



Hapflex 766
- Rubber Fasteners-



Hapflex 871
- Clear Mold -



Hapflex 791
- Label Doming -



Hapflex 871
- Production Cast Part-



Hapflex 873
- Rotational Molded Part -



Hapflex 870
- Blow Tube -

HAPFLEX 700 - 800 SERIES

PHYSICAL PROPERTIES	TEST METHOD	765	766	780	781	
		765-5	766-5	780-5	781-5	
PHYSICAL PROPERTIES	Mix Ratio by volume A:B	Calculation	100:20	100:20	100:25	100:25
	by weight A:B		100:20	100:20	100:25	100:25
	Gel time 100 grams @ 25°C	ASTM D-2971	23 min. 5 min.	23 min. 5 min.	20 min. 5 min.	20 min. 5 min.
	Color (cured)	Visual	Black	Colorless	Black	Colorless
	Hardness Shore	ASTM D-2240	65 A	65 A	80 A	80 A
	Viscosity mixed @ 25°C cps	ASTM D-4878	4,000	4,000	3,000	3,000
	Specific Gravity mixed @ 25°C	ASTM D-4669	1.04	1.04	1.01	1.01
	Shrinkage inch/inch See shrinkage paragraph	ASTM D-2566	.001- .003 .002- .004	.001- .003 .002- .004	.001- .003 .002- .004	.001- .003 .002- .004
	Demold time @ 70°F 1/8" thick	HAPCO TEST	16-24 hrs. 3-6 hrs.	16-24 hrs. 3-6 hrs.	10-16 hrs. 2-4 hrs.	10-16 hrs. 2-4 hrs.
	Weight per cubic inch (lbs.)	Calculation	0.0375	0.0375	0.0365	0.0365
PRODUCT PROPERTIES	Tensile Strength (psi)	ASTM D-638	800	800	2,150	2,150
	Elongation %	ASTM D-638	950	950	520	520
	Tear Strength (pli)	ASTM 624 Die C	170	170	260	260
	Modulus of Elasticity psi (000)	ASTM D-638	NA	NA	NA	NA
	Izod Impact (ft.lbs/in.) notched unnotched	ASTM D-256	No Break	No Break	No Break	No Break
	Heat Distortion Temperature (°C) 66 psi 264 psi	ASTM D-648	NA	NA	NA	NA
	Flexural Strength (psi)	ASTM D-790	NA	NA	NA	NA
	Flexural Modulus psi (000)	ASTM D-790	NA	NA	NA	NA
	Available in Flame Retardant (FR)	UL 94V	No	No	No	No

NOTE: Before use, reference material handling, processing, and safety notes located at the end of this brochure

HAPFLEX 700 - 800 SERIES

PHYSICAL PROPERTIES	TEST METHOD	790	791	870	871	873	
		790-5	791-5	870-4	871-4	873-4	
PHYSICAL PROPERTIES	Mix Ratio by volume A:B	Calculation	100:15	100:15	100:32	100:32	100:32
	by weight A:B		100:15	100:15	100:32	100:32	100:32
	Gel time 100 grams @ 25°C	ASTM D-2971	20 min. 5 min.	20 min. 5 min.	20 min. 4 min.	20 min. 4 min.	20 min. 4 min.
	Color (cured)	Visual	Black	Colorless	Black	Colorless	Red
	Hardness Shore	ASTM D-2240	90 A	90 A	72 D	72 D	72 D
	Viscosity mixed @ 25°C cps	ASTM D-4878	4,000	4,000	4,300	4,300	4,300
	Specific Gravity mixed @ 25°C	ASTM D-4669	1.03	1.03	1.03	1.03	1.03
	Shrinkage inch/inch See shrinkage paragraph	ASTM D-2566	.001-.003 .002-.004	.001-.003 .002-.004	.0015-.0040 .0025-.0045	.0015-.0040 .0025-.0045	.0015-.0040 .0025-.0045
	Demold time @ 70°F 1/8" thick	HAPCO TEST	10-16 hrs. 2-4 hrs.	10-16 hrs. 2-4 hrs.	8-12 hrs. 1-3 hrs.	8-12 hrs. 1-3 hrs.	8-12 hrs. 1-3 hrs.
	Weight per cubic inch (lbs.)	Calculation	0.0372	0.0372	0.0372	0.0372	0.0372
PRODUCT PROPERTIES	Tensile Strength (psi)	ASTM D-638	3,530	3,530	3,700	3,700	3,700
	Elongation %	ASTM D-638	420	420	65	65	65
	Tear Strength (pli)	ASTM 624 Die C	350	350	620	620	620
	Modulus of Elasticity psi (000)	ASTM D-638	NA	NA	6	6	6
	Izod Impact (ft.lbs/in.) notched unnotched	ASTM D-256	No Break	No Break	1.5 6.3	1.5 6.3	1.5 6.3
	Heat Distortion Temperature (°C) 66 psi 264 psi	ASTM D-648	NA	NA	54°C 40°C	54°C 40°C	54°C 40°C
	Flexural Strength (psi)	ASTM D-790	NA	NA	2,350	2,350	2,350
	Flexural Modulus psi (000)	ASTM D-790	NA	NA	13.9	13.9	13.9
	Available in Flame Retardant (FR)	UL 94V	No	No	No	No	No

NOTE: Before use, reference material handling, processing, and safety notes located at the end of this brochure

HAPFLEX 1000 SERIES

The **HAPFLEX 1000 Series** products are soft, colorless, Shore A elastomers. These materials are available in both a fast and slow gel time and can also be combined to yield customized gel times without the addition of heat.

HAPFLEX 1000 Series products are available in a 25, 35 and 55A hardness, but can be blended together to produce other Durometers. For example: mixing the 1036 (35A) and 1056(55A) B sides and the averaging the mixing ratio will yield a hardness of 45A. Contact a Hapco representative for more information.

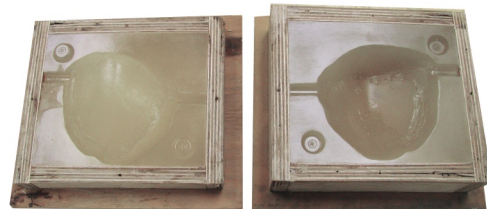
The **HAPFLEX 1000 Series** is colorless and will take pigments very well; however, because of its chemistry, only "MP" color dispersions should be used. These have been specially formulated for use with the **1000 series** and can be found in the Color Dispersion section of this brochure.

HAPFLEX 1000 Series products are used in both Liquid Molding applications (i.e. parts, gaskets, molds) and electrical insulation applications (i.e. potting and encapsulating).

HAPFLEX 1000 SERIES IN ACTION



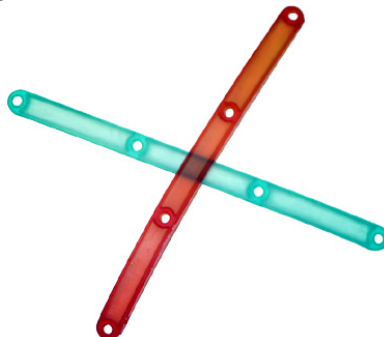
Hapflex 1021
- Rubber Tubes -



Hapflex 1036
- Two Part Skull Mold -



Hapflex 1056
- Hapco H Mold -



Hapflex 1056
- Rubber Fasteners -



Hapflex 1036-5
- Finger Pad Prototype -

HAPFLEX 1000 SERIES

	PHYSICAL PROPERTIES	TEST METHOD	1021	1036	1056
				1036-5	1056-5
PHYSICAL PROPERTIES	Mix Ratio by volume A:B	Calculation	100:200	100:300	100:400
	by weight A:B		100:200	100:300	100:400
	Gel time 100 grams @ 25°C	ASTM D-2971	16 min.	16 min. 5 min.	16 min. 5 min.
	Color (cured)	Visual	Colorless	Clear / Translucent	Colorless / Slightly Cloudy
	Hardness Shore	ASTM D-2240	20 A	35 A	55 A
	Viscosity mixed @ 25°C cps	ASTM D-4878	2,500	3,000	4,500
	Specific Gravity mixed @ 25°C	ASTM D-4669	1.15	1.16	1.16
	Shrinkage inch/inch See shrinkage paragraph	ASTM D-2566	.001-.003	.001-.003 .002-.004	.001-.003 .002-.004
	Demold time @ 70°F 1/8" thick	HAPCO TEST	6 - 8 hrs.	6 - 8 hrs. 2 - 4 hrs.	4 - 6 hrs. 1 - 2 hrs.
	Weight per cubic inch (lbs.)	Calculation	0.0415	0.0419	0.0419
PRODUCT PROPERTIES	Tensile Strength (psi)	ASTM D-638	300	450	650
	Elongation %	ASTM D-638	>1,200	1,000	950
	Tear Strength (pli)	ASTM 624 Die C	65	85	120
	Modulus of Elasticity psi (000)	ASTM D-638	NA	NA	NA
	Izod Impact (ft.lbs/in.) notched unnotched	ASTM D-256	No Break	No Break	No Break
	Heat Distortion Temperature (°C) 66 psi 264 psi	ASTM D-648	NA	NA	NA
	Flexural Strength (psi)	ASTM D-790	NA	NA	NA
	Flexural Modulus psi (000)	ASTM D-790	NA	NA	NA
Available in Flame Retardant (FR)	UL 94V	No	No	No	

NOTE: Before use, reference material handling, processing, and safety notes located at the end of this brochure

PD COLOR DISPERSION SERIES

OPAQUE COLOR DISPERSIONS



**PD-6 M
RED**

0.03 (3%) by weight
in Ultralloy 206/207



**PD-15 M
ORANGE**

0.03 (3%) by weight
in Ultralloy 206/207



**PD-3 M
YELLOW**

0.03 (3%) by weight
in Ultralloy 206/207



**PD-25 M
YELLOW**

0.03 (3%) by weight
in Ultralloy 206/207



**PD-4 M
GREEN**

0.03 (3%) by weight
in Ultralloy 206/207



**PD-9 M
BROWN**

0.03 (3%) by weight
in Ultralloy 206/207



**PD-1 M
DARK BLUE**

0.03 (3%) by weight
in Ultralloy 206/207



**PD-26 M
BLUE**

0.03 (3%) by weight
in Ultralloy 206/207



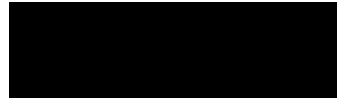
**PD-8 M
LIGHT GREY**

0.03 (3%) by weight
in Ultralloy 206/207



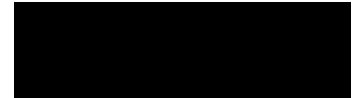
**PD-11 M
DARK GREY**

0.03 (3%) by weight
in Ultralloy 206/207



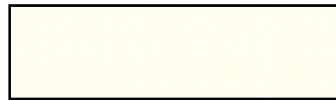
**PD-2 M
CARBON BLACK**

0.02 (2%) by weight
in Ultralloy 206/207



**PD-512 M
BLACK OXIDE**

0.02 (2%) by weight
in Ultralloy 206/207



**PD-7 M
WHITE**

0.05 (5%) by weight
in Ultralloy 206/207

PD - Mix Ratio: Add 1 - 5% (0.01-0.05) by weight to Part B, mix well. In above results, ratios were added by weight to Ultralloy 206/207 Part B, then mixed and cured.

Color Dispersions are compatible with most Hapco Resin Systems except those listed under the MP Color Series. Read product list for MP Color Series. All of Hapco Color Dispersions are appropriate for standard and/or Food and Drug applications.

Weigh the color additions accurately for batch to batch uniformity. The above colors may be blended to form additional colors.

NOTES:

All above Ratios are % added by weight to **Ultralloy 206/207 Part B**, then mixed and cured.

Packaging Available: 1/2 pint cans, 1 quart cans, 1 gallon pails, and 5 gallon pails.

TD COLOR DISPERSION SERIES

* TRANSLUCENT COLOR DISPERSIONS



TD-22 M
RED
0.005 (1/2%) by weight
in Ultralloy 206/207



TD-24 M
YELLOW
0.005 (1/2%) by weight
in Ultralloy 206/207



TD 20 M
VIOLET
0.005(1/2%) by weight
in Ultralloy 206/207



TD-21 M
ORANGE
0.005 (1/2%) by weight
in Ultralloy 206/207



TD-23 M
BLUE
0.005 (1/2%) by weight
in Ultralloy 206/207



TD-28 M
BLACK
0.005 (1/2%) by weight
in Ultralloy 206/207

TD - Mix Ratio: Add 1/10 - 2% (0.001-0.02) by weight to Part B, mix well. In above results, ratios were added by weight to Ultralloy 206/207 Part B, then mixed and cured. Less than 1/10% (0.001) by weight may be added to the Part B for very translucent colors, 1/2% (0.005) to 2% (0.02) may be added to Part B to form opaque colors.

Color Dispersions are compatible with most Hapco Resin Systems except those listed under MP Color Series. Read product list for MP Color Series. All of Hapco Color Dispersions are appropriate for standard and/or Food and Drug applications.

Weigh the color additions accurately for batch to batch uniformity. The above colors may be blended to form additional colors.

NOTES:

All above Ratios are % added by weight to **Ultralloy 206/207 Part B**, then mixed and cured.

Packaging Available: 1/2 pint cans, 1 quart cans, 1 gallon pails, and 5 gallon pails.

*Translucent color dispersions are not translucent in some Liquid Molding Systems. Consult your Hapco Representative for more details.

MP COLOR DISPERSION SERIES

TRANSLUCENT* and OPAQUE COLOR DISPERSIONS for

- Hapflex 1021, 1036, 1036-5, 1056, 1056-5
- Steralloy 2021, 2021-5, 2036, 2036-5, 2056, 2056-5
- Di-Pak 4021, 4036, 4036-5, 4056, 4056-5



**TD-22 MP
RED**
0.005 (1/2%) by weight
in Ultralloy 206/207



**TD-24 MP
YELLOW**
0.005 (1/2%) by weight
in Ultralloy 206/207



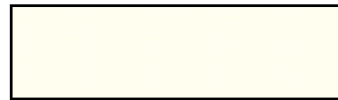
**TD-23 MP
BLUE**
0.005 (1/2%) by weight
in Ultralloy 206/207



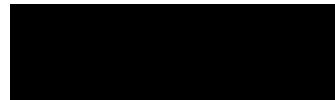
**TD-21 MP
ORANGE**
0.005 (1/2%) by weight
in Ultralloy 206/207



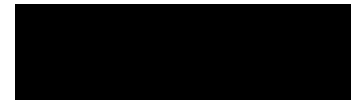
**PD-3 MP (Opaque)
YELLOW**
0.03 (3%) by weight
in Ultralloy 206/207



**PD-7 MP (Opaque)
WHITE**
0.05 (5%) by weight
in Ultralloy 206/207



**PD-2 MP (Opaque)
BLACK**
0.02 (2%) by weight
in Ultralloy 206/207



**TD-28 MP
BLACK**
0.005 (1/2%) by weight
in Ultralloy 206/207

TD - Mix Ratio: Add 0.005 - 0.05% by weight to Part B, mix well.

Less than 1/10% or less than 0.001 by weight can be added to the Part B for very translucent colors, 1/2% (0.005) - 2% (0.02) may be added to the Part B, by weight, for opaque coloring.

PD - Mix Ratio: Add 1—5% (0.01-0.05) by weight to Part B, mix well.

Weigh the color additions accurately for batch to batch uniformity. The above colors may be blended to form additional colors.

NOTES:

All above Ratios are % added by weight to **Ultralloy 206/207 Part B**, then mixed and cured.

Packaging Available: 1/2 pint cans, 1 quart cans, 1 gallon pails, and 5 gallon pails.

*Translucent color dispersions are not translucent in some Liquid Molding Systems. Consult your Hapco Representative for more details.

HAPFLEX SERIES

MATERIAL HANDLING & SAFETY NOTES

POSTCURE:

Postcure Heat: 100-175°F (38-79°C) for a *minimum* of 6-12 hours.

Properties increase with heat acceleration. Izod impact and heat distortion properties increase with postcure heat.

The lower the temperature the longer the post-cure (8-24 hrs). Durometers of 25A to 95A should be post cured @ 100-140°F and 50A to 70D can be post cured up to 80°C.

DEMOLD & CURE TIMES:

Demold and final cure time can be accelerated with the addition of postcure heat 100-175°F (38-79°C) .

To retain working life, heat the mold not the material for best results. Increasing the mold temperature to 80-100°F (26-38°C) will accelerate demold and cure times by up to 50%. For full cure polymers require at least 7-10 days.

Final cure for faster gel materials (3-6 minute gel) is 3-7 days. Please be aware that size and mass effect demold and cure times. The customer and geometry will ultimately determine demold time.

HARDNESS NOTE:

The hardness progresses more slowly in the longer working life systems. The hardness progression can be accelerated by using the faster version or by curing with mild heat. Hardness and cure progress will be retarded, slowed down, when the temperature falls below 70°F.

SURFACE PREPARATION TO PREVENT ADHESION:

To prevent adhesion to the mold, choose one of Hapco's GREASE-IT release agents:

GREASE-IT II, GREASE-IT IV, GREASE-IT V, GREASE-IT WAX P, GREASE-IT WAX LT and GREASE-IT FDG when a Food & Drug grade release is required. For best results, apply in a few thin coats, drying between coats. Porous surfaces, i.e. wood, plaster, etc, must be sealed thoroughly before release is applied. Use multiple coats of a good coating, such as: a high grade lacquer or urethane lacquer.

NOTE: Silicone release agents and silicone rubber molds may adversely affect the **HAPFLEX 700 & 800 Series** surface. It is up to the user to test the appropriateness and judge the above products for use with Hapflex materials.

SURFACE PREPARATION FOR ADHESION:

For applications where adhesion is desired, the surface must be cleaned, abraded and dried. Sandblasting and mechanical roughing are the preferred ways of abrading surfaces to be bonded. For added adhesion to metals, use Primer 200 and for added adhesion to plastic, use Primer 810. Make sure all surfaces are clean, dry, and free from moisture.

COLD TEMPERATURES:

CAUTION - Part A may freeze or crystallize in cold temperatures. Part A may appear to be striated or solidify. This situation can easily be corrected. Place the cover on the Part A loosely (do not seal) and place in an oven set at 125-150°F (51-65°C) for 3-8 hours or 8-12 hours for drums. Reseal, allow to cool, and then mix thoroughly.

CAUTION - Part B may freeze or crystallize in cold temperatures. Part B may turn thicker, appear to be striated, thicken, or solidify. **To prevent this see storage.**

This situation can be easily corrected. To reverse crystallization, loosen the cover on Part B and heat to 170-180°F (77-82°C) for 3-6 hours, drums, 6-12 hours. Allow to cool before using. If contents are pigmented, mix thoroughly.

MIXING:

IMPORTANT: Before each use, mix pigmented Part B thoroughly before proportioning out the required amount.

Components may separate and should be mixed before each use. Mix, only when ready to use, by adding the curing agent to the resin portion and blending together thoroughly. Be sure to scrape and stir in all material sticking to the sides and bottom of the mixing container. Do not use paper containers or wooden mixing sticks. They may contain moisture. For best results, use plastic or coated containers, and metal or plastic sticks.

MACHINE MIXING AND DISPENSING:

Use Hapco's **RAPIDFIL**, **MINIFIL**, and/or **RAPIDSHOT** dispensing machines for fast, reliable, and efficient mixing without the air entrapment, measuring, or mess associated with hand processing.

HAPFLEX SERIES

MATERIAL HANDLING & SAFETY NOTES (cont.)

CASTING:

Pour in a thin unbroken stream into the lowest point in the cavity or mold. This will help break up some of the air entrapped during mixing. For best results, Hapco recommends meter mix dispensing, vacuum degassing and/or pressure casting at 70-80 PSI.

SHRINKAGE:

Shrinkage or dimensional variation is largely influenced by 5 factors:

1. Mass (total volume and thickness)
2. The temperature of the material
3. Maximum temperature reached during the exotherm (reaction).
The faster the gel time, the higher the exotherm, the greater the shrinkage.
4. The temperature of the mold
5. The thermal properties of the mold material.(Insulator vs. Conductive)

Geometry, part thickness, and total volume vary in each design, therefore, the customer is responsible to test and determine the shrinkage factor to be used. The values in the brochures are for comparative reference only, using ASTM testing procedures.

SILICONE MOLDS:

Silicone molds should be post cured overnight, 16-24 hours, in an oven at 120°F (48°C). When using a tin based Silicone mold, make sure the mold is open when it is in the oven during postcure. Improperly cured Silicone can cause a sticky surface on molded parts. This process extends mold life and reduces the problem of sticky surface cures. **HAPFLEX 700/800 Series products may have a negative reaction to silicone rubber molds.**

AIR RELEASE:

Use Hapco's ANTI-AIR to aid in air release when vacuum degassing (see Technical Bulletin). In some products, ANTI-AIR can cause a slight haze to cloudiness. This has no effect on properties.

CLEAN UP:

Cured polymers are difficult to remove. It is best to clean tools and equipment immediately after use. For best results use Hapco's A-TAK.

STORAGE:

Store both components in an area with a temperature range of 68-90°F (20-32°C). Store in a dry place off of cement floors and on shelving if possible. Containers should be kept tightly closed.

SHELF LIFE:

The shelf life on Hapco products begins from the date of invoice for that product shipment. Hapco's shelf life only pertains to containers that are unopened and in their original condition. Once the container is opened Hapco has no control or responsibility for the shelf life.

RESEALING:

Many polymers are moisture sensitive. Containers should be resealed using one of the following methods: Blanket with nitrogen or use a hair dryer for 30 seconds to cover with dry air.

PRECAUTIONS:

CAUTION: The MSDS should be read thoroughly before using this product.

Skin or eye contact with polymers should be avoided. The use of gloves and eye protection are strongly recommended. All polymers, as a general practice, should be used in well-ventilated areas. Spot ventilation is most effective. Contaminated clothing should be removed immediately and the skin washed with soap and water or waterless skin cleaner. Should accidental eye contact occur, wash thoroughly with water and consult a physician.

The information presented here is based on carefully conducted laboratory tests and is believed to be accurate. However, results cannot be guaranteed and it is suggested that customers confirm results under their conditions and in their applications before production use.

Important: Hapco Inc. makes no warranty, whether expressed or implied, including warranties of merchantability or of fitness for a particular purpose. Under no circumstances shall Hapco Inc. be liable for incidental, consequential, or other damages from alleged negligence, breach of warranty, strict liability, tort contract, or any other legal theory, arising out of the use of handling of this product. The sole remedy of purchaser and sole liability of Hapco Inc. shall be for the purchase price of the product which is the subject of the claim.