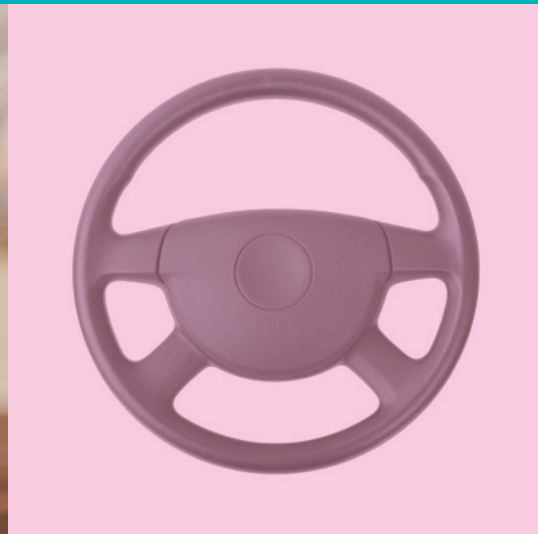


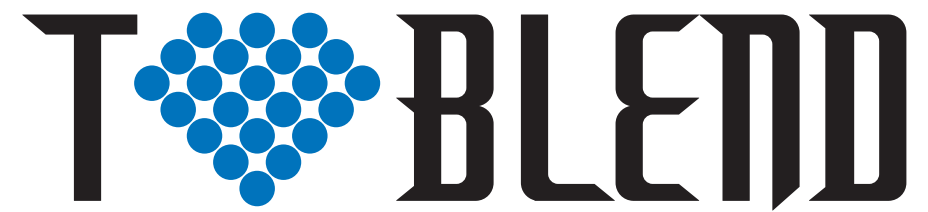
TPE SPECIALIST & SOLUTION PROVIDER



TSRC CORPORATION



TSRC CORPORATION



TSRC Corporation, formerly known as Taiwan Synthetic Rubber Corp., was established in 1973. Since its inception, TSRC has vigorously expanded its business by establishing production bases and commercial teams in China (Nantong in Jiangsu, Song-Jiang in Shanghai); Rayong, Thailand; Binh Duong, Vietnam; Panipat, India; and Plaquemine, U.S.A, to service growing demand from customers worldwide. It has since grown to become one of the largest elastomer companies in the world. Today, TSRC is much more than a synthetic rubber company. It is a specialty polymer company that services customers in the tire, automotive, industrial, consumer, footwear and medical product markets.

In its constant effort to deliver value to customers, TSRC leverages its four major competitive advantages: Stable Quality and Superior Service, Eco-responsible Manufacturing, Proven Supply Chain Reliability, and Technological Innovation. At the same time, TSRC continues to expand its portfolio with specialty products, thereby transforming itself from a mere material supplier into a full-service solution leader in the chemical industry.

TSRC is a leading global producer in styrenic block copolymer (SBCs) segments. It delivers enhanced durability and functionality in its expansive portfolio of SBC and TPE compounds, including TAIPOL® and VECTOR® SBS and SIS products, as well as SEBS, hydrogenated SBS and downstream products, and T-BLEND® Applied Materials. TSRC continues to broaden its sales network throughout Asia, Europe, and the Americas, where it can provide customers with consistent and reliable solutions, as well as responsive customer and technical services.

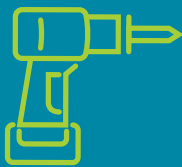


T-BLEND® TPE COMPOUNDS

Customized Formulation
with Modifiable Physical Properties

T-BLEND Applied Materials utilizes thermoplastic elastomer and other applied materials, which are melted via the mixer after being prepared in accordance with a certain proportion.

Our product is a range of compounded materials based on SEBS that designed for application from soft touch grips to light weight shoes, elastic hygiene to medicals and new applications with specific function added.



SOFT TOUCH AND GELS

T-BLEND gel compounds provide a wide range of hardnesses, from shore to shore A 80; standard grades are available; and it can be customized for specific requirements.



OVERMOLDING

T-BLEND TPE compounds can be overmolded on handles to enhance grip. Overmolding types include 2K or multi-shot injection, which exhibit excellent adhesion to a variety of substrates, such as PC, ABS, and nylon etc. They can also be formulated for food contact applications.



ADVANCED SHOE MATERIAL (ASM) AND FOAM

T-BLEND foaming compounds are suitable for shoe applications which require lightweight and high resilience with compression proof and slip-resistant foaming material. The ASM series is available for standard grades and can be customized for specific colors and requirements.

ADVANCED SHOE MATERIAL & FOAM MATERIAL

KEY PROPERTIES OF SEBS FOAM

PERFORMANCE

- Exceptional plasticity
- High strength and toughness
- Good touch
- Improved compression set
- High flexibility
- Low shrinkage
- Good weather resistance
- Good matte surface
- High slip resistance
- Resistance to low temperatures

ADVANTAGES

- The compression and anti-slip properties of SEBS foam are superior to those of EVA foam board
- Its physical properties are similar to traditional rubber
- Chloroprene Rubber (CR), Ethylene Propylene Diene Rubber (EPDM), and Styrene Butadiene Rubber (SBR)
- Simple manufacturing process, odorless rubber, and easy color mixing
- Widely used as modifier for rubber/plastic foam products

ADVANCED SHOE MATERIAL (ASM)

T-BLEND ASM series is a premier SEBS compound formulated specifically for footwear that allows processing by compression molding and injection molding.

Our materials offer superior rebound with high impact absorption that can effectively absorb imposed force, giving the wearer a pleasant and comfortable walking and wearing experience.

Main applications include running shoes, walking shoes, cross fit training shoes, and basketball shoes.



Soft Touch



Lightweight



Low Compression Set



Anti-slip & Wear-resistant



Abrasion Resistance

FOAM FEATURES FOR SHOE SOLES

	Advantages	Potential Applications
LIGHT-WEIGHT FOAM	Density < 0.18 • Light-weight • Flexible hand feel	Packaging goods, toy foam wheels, foam absorption layer
HIGH RB FOAM	Rebound > 60% • To save energy & ease tiredness • Outstanding rebound & stable sustaining effect	Slippers, midsoles, mats, supports for sports & medical use, ear muffs (3C)
ANTI-SLIP FOAM	Anti-slip (dry) > 0.6; (wet) > 0.4 • A 10% increase in grip compared to typical EVA • Dry & wet non-slip performance	Outsoles, slippers
DAMPING FOAM	Rebound < 20% • Shock absorption • High impact absorption	Insoles, protective gears, flooring mats, memory pillows, impact protection gear, damping pads
BIO-FEED FOAM	10~45% of the content is bio-based • Better rebound, higher durability	Midsoles

FOAM MATERIALS

T-BLEND prime foaming product is designed for foam applications that require a better-than-normal combination of elasticity and slip resistance. It can be processed as a single grade or as a modifier for EVA. Our 4000 series foaming compound covers a wide range of hardnesses, from Shore A30 to A80. See the guide below for an introduction to our available product range. We welcome you to contact us and discuss your specific requirements.

Main applications include yoga mats & pads, sports products, footwear that requires superior support & resilience, and polymers that need to be foamed.



Advantages of TSRC's Products in Foam Applications

- Low temperature resistance
- Compatible with various rubber materials
- Shock-proof and highly flexible
- Anti-slipper and wear resistance
- Easiness to process to reduce the production cost
- Toxicity and odor free
- Recyclable

SEBS foaming material has high elongation toleration, firmness, superior compression-proof deformation, soft touch, excellent resistance to low temperatures, and anti-slip performance. With its excellent flexibility and rebound, SEBS foaming rubber material has better performance than EVA and is similar to PU and CR foaming in its tactile feel. SEBS foaming is highly compatible with raw materials such as EPDM, EVA, and SBR, and its simplified formula and manufacturing process provide it with more competition advantages.

SEBS & OTHER MATERIALS IN FOAM APPLICATION

	PU Foam	EVA Foam	T-BLEND Foam
Specific Gravity	○	◎	◎
Hardness	○	○	◎
Tensile Strength	◎	○	○
Elongation	○	○	◎
Tear Strength	◎	○	○
Compression Set	◎	×	◎
Shrinkage	◎	△	○
Rebound	○	△	◎
Anti-slip	◎	×	◎
Weather Resistance	×	○	◎

◎ Superb ○ Good △ Moderate × Poor



ADVANCED SHOE MATERIAL POLYMER GRADE

Grade	Application	Process	Expansion Ratio (%)	Compression Ratio (%)	Hardness (Asker C)	Specific Gravity	Tensile (kg/cm²)	Elongation (%)	Tear (kg/em)	Split Tear (kg/em)	Compression Set (%)	Rebound (%)	Shrinkage (%)	Energy Return (%)
ASM-L1	Lightweight	CMP	2	1.55	52-53	0.14	35	264	14.5	2.4	35	55	1.93	56
ASM-L2	Lightweight	CMP	1.89	1.5	55	0.16	32	281	9.9	2.7	49	58	1.4	59
ASM-L3	Lightweight	CMP	1.78	1.6	50	0.18	35	350	14.4	2.9	35	68	0.44	70
ASM-R1	High Performance	CMP	1.8	1.45	45-51	0.18	29.6	310	14.8	2.5	46	64	1.8	69
ASM-R2	High Performance	IP	1.68	-	41-45	0.17	33	360	9	2.5	56	52	1.5	42
ASM-R4	High Performance	CMP	1.75	1.6	40	0.19	23	330	10	2.2	50	65	2	70
ASM-E1	High Performance-Energy Return	IP	1.55	-	42-48	0.27	21	430	16	2.6	49	54	1.8	60
ASM-E2	High Performance-Energy Return	IP	1.5	-	42	0.21	35	466	12.3	2.5	56	67	1.8	65
ASM-E3	High Performance-Energy Return	IP	1.47	-	46	0.25	38.1	441	14.02	2.4	41.5	69	2.5	70
ASM-G1	Green	CMP	-	-	56-58	0.204	33.3	300	15.2	3.21	55.5	44	0.36	64.16
ASM-G2	Green	CMP	-	-	45-49	0.208	31.8	279	13.9	2.88	47.7	52	1.86	67.15

*CMP: Compression molding process
*IP: Injection molding process

PRIME FOAMING GRADE

Grade	Application	Color	Hardness (Shore A)	Specific Gravity	Tensile Strength (kgf/cm²)	300% Modulus (kg/cm²)	Elongation (%)	Melt flow Rate (g/10min) 5kg at 180°C	Tear Strength (kg/cm)
		Test Method	ASTM D2240	ASTM D792	ASTM D2242	ASTM D412	ASTM D412	ASTM D1238	ASTM D624
4000-40N	Modification	Natural	40-46	1.03-1.07	25	30	450	2-10	18
4001-45N	Modification	Natural	44-50	1.07-1.11	29	23	490	40-80	19
4001-75T	Modification	Translucent	73-79	0.88-0.92	60	40	500	6-16	35
4001-90N	Modification	Natural	87-93	1.16-1.20	60	/	150	4-12	30
4003-40N	Modification	Natural	35-41	1.16-1.20	10	-	250	2-8	8
4003-45N	Modification	Natural	42-48	1.04-1.08	28	24	470	2-10	20
4003-75N	Modification	Natural	73.79	1.06-1.10	35	-	200	3-9	25
4010-50N	Modification	Natural	47-53	0.90-0.94	65	25	650	1-5	25
4010-60N	Modification	Natural	62-68	0.96-1.00	50	25	650	4-12	25
4003-45N	Modification	Natural	42-48	1.04-1.08	29	23	490	2-10	19
4011-55N	Modification	Natural	58-62	0.92-0.96	42	37	340	0.5-5	37
4012-55N	Modification	Natural	48-52	0.99-1.03	28	22	450	1-5	25
4001-45N	Modification	Natural	44-50	1.07-1.11	30	16	200	40-80	20
4004-75N	Modification	Natural	72-78	0.99-1.05	68	35	220	1-5	40
4008-65N	Modification	Natural	59-65	0.88-0.92	30	15	900	2-8	20

SOFT TOUCH & GELS

This is a series of TPE materials designed for applications in shoes and sporting goods. The hardness range covers extremely soft Shore OO to Shore A 80, and thus can meet a wide range of application requirements, such as gel insoles, shoe outsoles, and sporting accessories/parts.

In the product table, we have provided an overview of the typical properties for some of the compounds. See the guide below for an introduction to our available product range. We welcome you to contact us and discuss your specific requirements.

Main applications include shoe-pads, insoles, outsoles, and accessories.



Shock-proof
& Anti-slip



Good Weather
Resistance

Products Undergo UV
and Ozone Aging Testing



Superior
Color Match



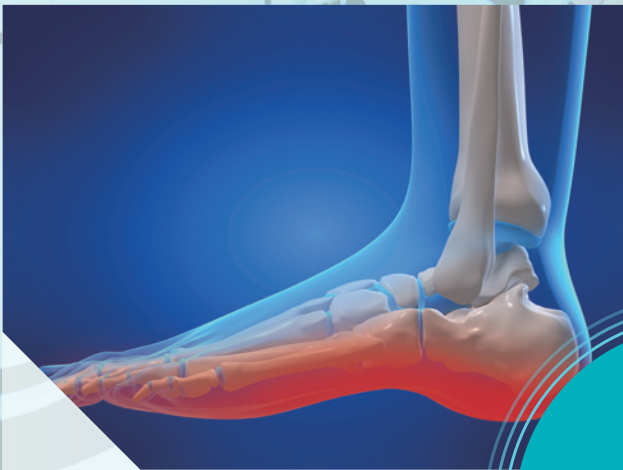
Soft Touch



A Wide Range of
Hardnesses
Available

Shore A To D

TIRED ACHY FEET



ACHY PAIN RELIEF



Clinically
Proven to Relieve
Arch Pain



Ultra-soft Gel
Provides
Pain-release Property



9mm Depth Design
Fits The Heel Comfort
to Absorb Shock

Designed for
Arch Pain Relief,
Low Compression Set
Provides Quick
Foam Recovery

PRIME SOFT TOUCH & GEL GRADE

Grade	Application	Color	Hardness (Shore A)	Specific Gravity	Tensile Strength (kgf/cm²)	300% Modulus (kg/cm²)	Elongation (%)	Melt Flow Rate (g/10min) 5kg at 180°C	Tear Strength (kg/cm)
		Test Method	ASTM D2240	ASTM D792	ASTM D2242	ASTM D412	ASTM D412	ASTM D1238	ASTM D624
2102-10T	General	Translucent	7-13A	0.85-0.89	7	1	700	5-15	3
2002-10S	General (52~58 OO)	Translucent	52-58 (Type 00)	0.84-0.90	12	3	800	35-75 (160°C, 2.16kg)	3
2003-10	General (52~58 OO)	Translucent	52-58 (Type 00)	0.85-0.91	15	4	740	35-85 (160°C, 2.16kg)	4
1003-350	General (<60 Shore A)	Translucent	30-36	0.89-0.93	35	20	700	40-80 (180°C, 2.16kg)	22
2128-40N	General (<60 Shore A)	Natural	39-45	0.87-0.93	35	30	400	1-20 (200°C, 5kg)	16
2100-40T	General (<60 Shore A)	Natural	39-45	0.87-0.93	32	29	410	5-20 (200°C, 5kg)	18
1001-450	General (<60 Shore A)	Natural	42-48	0.89-0.95	60	29	940	10-30 (180°C, 2.16kg)	30
1903-45N	General (<60 Shore A)	Natural	44 50	0.99-1.05	26	22	465	30-105	15
3001-45N	General (<60 Shore A)	Natural	46-50	0.94-0.98	30	18	230	2-8 (200°C, 5kg)	23
1000-50T	General (<60 Shore A)	Translucent	47-53	0.91-0.95	55	25	1030	25-45 (180°C, 2.16kg)	27
2125-50N	General (<60 Shore A)	Natural	47-53	1.02-1.06	20	15	500	8-16	15
2900-55N	General (<60 Shore A)	Natural	52-58	0.99-1.05	28	26	305	6-16 (180°C, 2.16kg)	22
1600-60N	General (<60 Shore A)	Natural	55-61	0.88-0.92	24	23	318	60-120	18
2102-60B	General	Black	57-63	0.99-1.03	30	25	400	60-120	16

Grade	Application	Color	Hardness (Shore A)	Specific Gravity	Tensile Strength (kgf/cm²)	300% Modulus (kg/cm²)	Elongation (%)	Melt Flow Rate (g/10min) 5kg at 180°C	Tear Strength (kg/cm)
		Test Method	ASTM D2240	ASTM D792	ASTM D2242	ASTM D412	ASTM D412	ASTM D1238	ASTM D624
2108-65T	General (>60 Shore A)	Natural	63-69	0.85-0.91	52	-	219	25-75	32
2102-70N	General (>60 Shore A)	Natural	67-73	0.98-1.02	40	30	500	40-100	25
1900-75N	General (>60 Shore A)	Black	72-78	0.97-1.03	82	59	707	20-110	64
1100 80N	General (>60 Shore A)	Natural	77-83	0.97-1.01	50	35	500	30-70	30
1103-85N	General (>60 Shore A)	Black	83-89	0.98-1.04	94	78	278	45-75	67
1500-70N	General (>60 Shore A)	Natural	67-73	0.9-0.94	35	20	700	5-15 (190°C, 2.16kg)	25
2102 70N	General (>60 Shore A)	Natural	67-73	0.98-1.02	50	30	500	40-100	25
3001-75N	General (>60 Shore A)	Natural	72-78	0.88-0.94	62	-	232	10-40	36

OVERMOLDING

Our overmolding materials bond excellently with PP, PE, PA, PC, ABS, PS and their blends, provide soft-touch qualities that make the end products comfortable, safe, resilient, durable, and visually appealing. It makes new designs possible and creates a competitive edge for the product in the form of ergonomic, fatigue-resistant, and repetitive motion-resistant grips for tools that carry vibration & impact during use. As materials are bonded together at the injection molding stage, no adhesive is needed prior to processing.

Main applications include hand and power-tool grips, bicycle grips (especially trail and off-road sport bicycles), high-value consumer goods that need unique ergonomics as well as safety & durability, writing instruments like pens and pointers for touch pad pens, accessories and automotive parts where durable, resilient, soft touch properties are required.

SEBS-BASED COMPOUNDS

OVERMOLDING

A soft, elastic layer moulded onto a hard, rigid plastic (engineering) surface to provide a 'soft touch'

PROCESSES

- Two-stage injection moulding
- Co-moulding

GOOD ADHESION REQUIRES

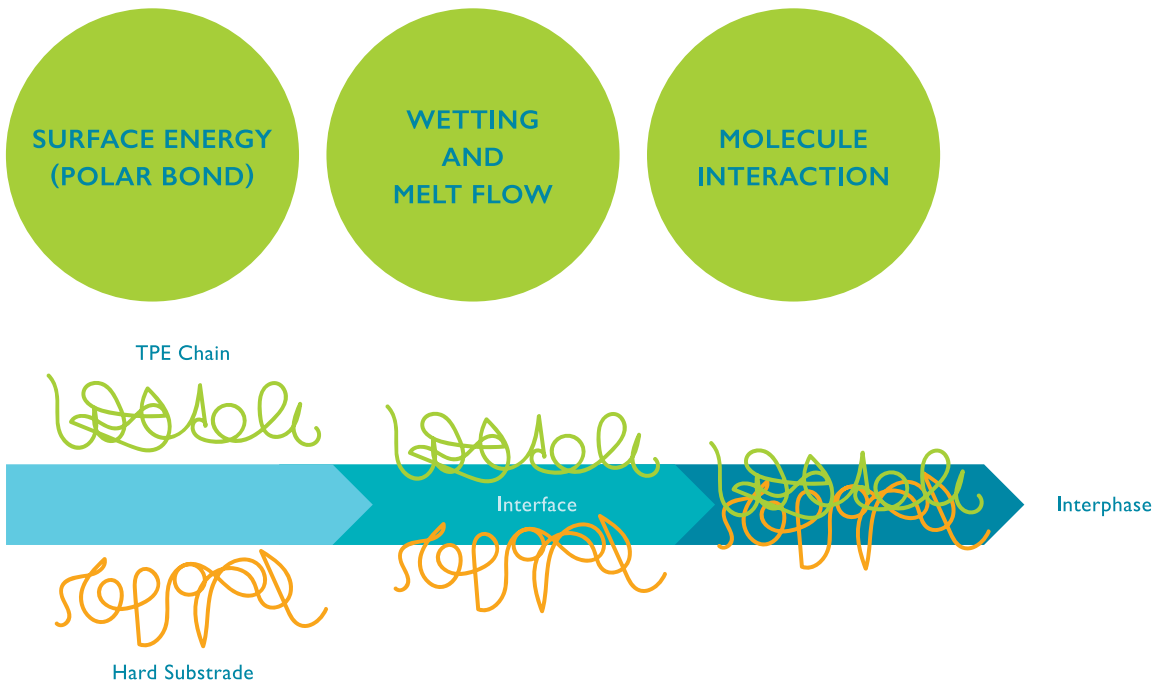
- Compatibility at the interface of materials
- Good interface wetting by
 1. Good flow (use of tackifier resins like rosin esters)
 2. Optimisation of moulding conditions (gate, temperature)
- Low residual stress



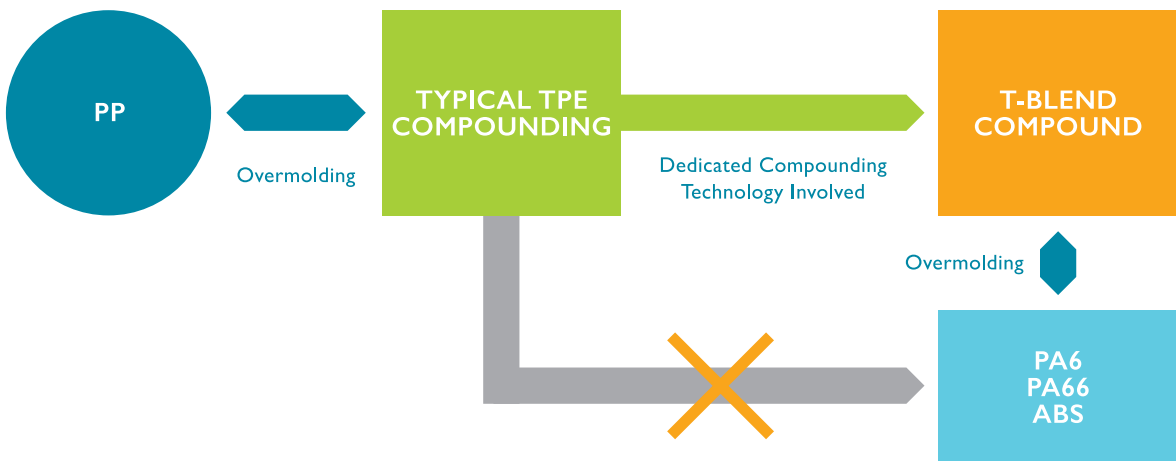
TPEs' OVERMOLDING

TPEs Compound Paste on Substrate
(PP,ABS, PC, Nylon...)

Three Overmolding Mechanisms



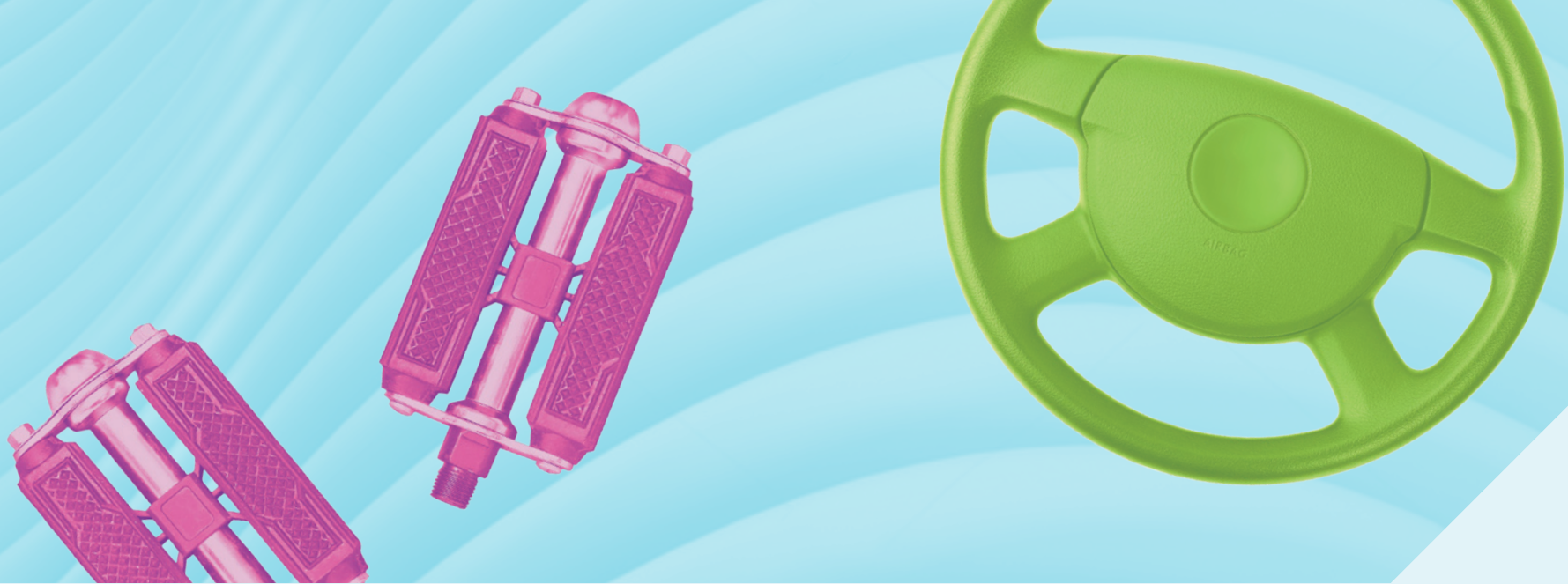
Mechanism of The T-BLEND Compound for Adhering to Engineering Plastics



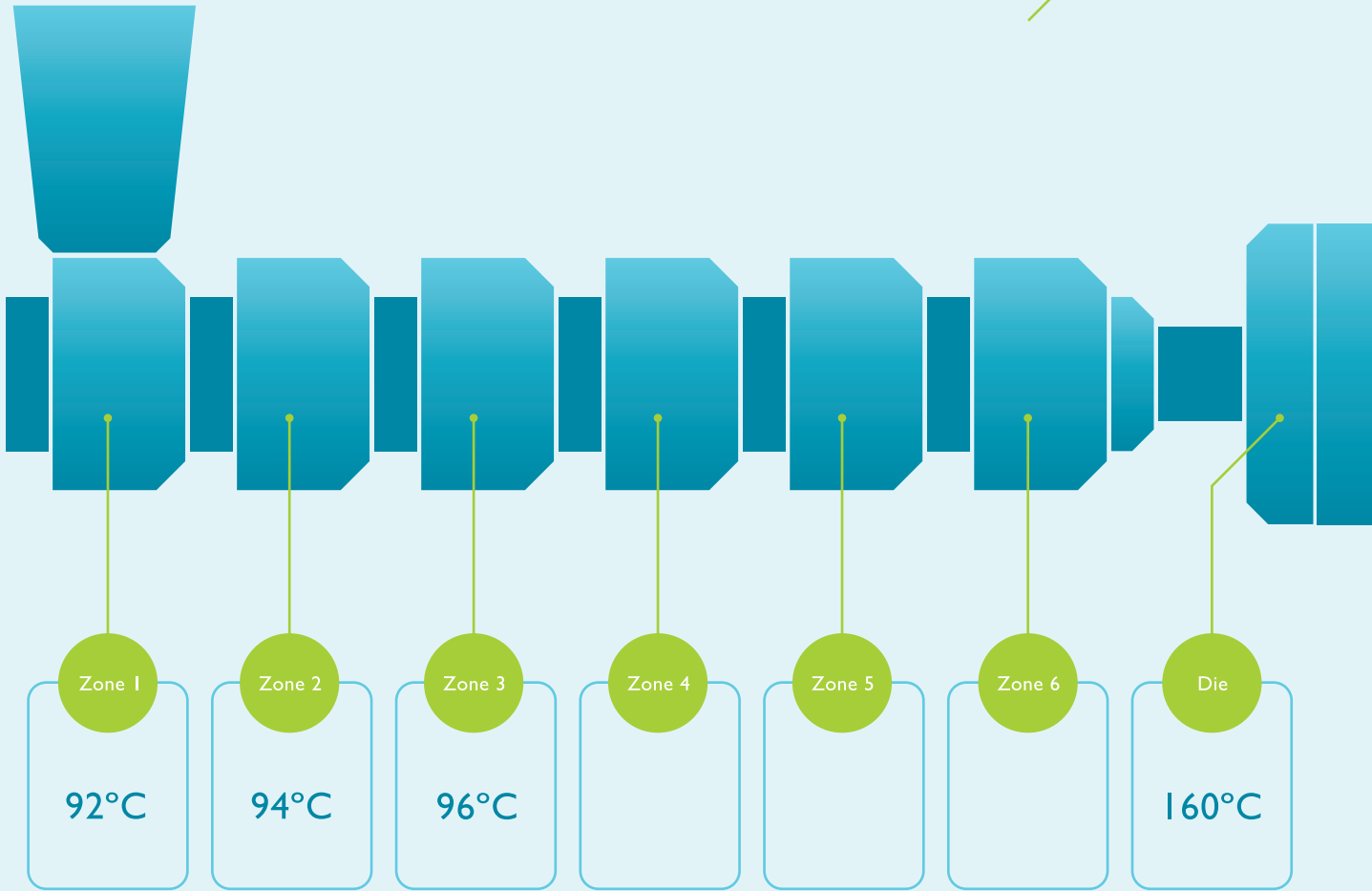
PRIME OVERMOLDING POLYMER GRADE

Grade	Thermoplastic Noted to be Overmolded	Color	Hardness (Shore A)	Specific Gravity	Tensile Strength (kgf/cm ²)	300% Modulus (kg/cm ²)	Elongation (%)	Melt flow Rate (g/10min) 5kg at 180°C	Tear strength (kg/cm)
		Test Method	ASTM D2240	ASTM D792	ASTM D2242	ASTM D412	ASTM D412	ASTM D1238	ASTM D624
0200-65N	ABS	Natural	60-66	1.16-1.20	30	NA	500	35-75	24
0203-70N	ABS	Natural	65-71	1.03-1.07	100	30	600	5-25	35
0200-40N	ABS	Natural	37-43	0.96-1.00	30	15	400	70-130	10
0201-40N	ABS	Natural	37-43	1.00-1.04	25	9	600	70-170	9
0201-45N	ABS	Natural	27-33	1.07-1.11	15	10	400	50-150	10
0201-50N	ABS	Natural	47-53	1.04-1.08	30	12	800	30-90	15
0204-55N	ABS	Natural	50-56	1.13-1.17	20	-	250	50-150	12
0200-60N	ABS	Natural	57-63	1.03-1.07	100	30	700	5-25	40
Grade	Thermoplastic Noted to be Overmolded	Color	Hardness (Shore A)	Specific Gravity	Tensile Strength (kgf/cm ²)	300% Modulus (kg/cm ²)	Elongation (%)	Melt flow Rate (g/10min) 5kg at 180°C	Tear strength (kg/cm)
		Test Method	ASTM D2240	ASTM D792	ASTM D2242	ASTM D412	ASTM D412	ASTM D1238	ASTM D624
2100-90N	Polyolefins (PP/PE)	Natural	87-93	0.99-1.03	100	60	600	15-35	55
2102-10T	PP/PE	Translucent	17-23AO	0.85-0.89	5	1	800	5-15	1.5
2125-50N	PP/PE	Natural	47-53	1.02-1.06	20	15	500	8-16	15
2103-35T	PP/PE	Natural	32-38	0.86-0.90	30	12	600	1-11	12
2104-45N	PP/PE	Natural	42-48	1.03-1.07	15	16	400	56-65	10
2104 65I	PP/PE	Translucent	62-68	0.87-0.91	60	35	700	1-9	20
0300-60N	Polyamides (PA's, Nylons)	Natural	53-59	0.98-1.02	26	23	450	11-35 (180°C 2.16Kg)	20
0300-90N	PA's	Natural	88-94	0.99-1.03	110-130	30	450-600	20-40	90-110
6594-65B	PA's	Black	62-68	0.98-1.02	35	30	450	30-70	20
6594 65N	PA's	Natural	62-68	0.99-1.03	40	35	400	20-60	25
0300-70N	PA's	Natural	67-73	1.00-1.06	51	46	400	7-23	39
0400-55C	Polycarbonate (PC)	Translucent	49-55	0.90-0.94	50	15	800	40-80	20
0400-60N	PC	Natural	57-63	1.00-1.06	56	45	400	5-25	44

PROCESSING GUIDE

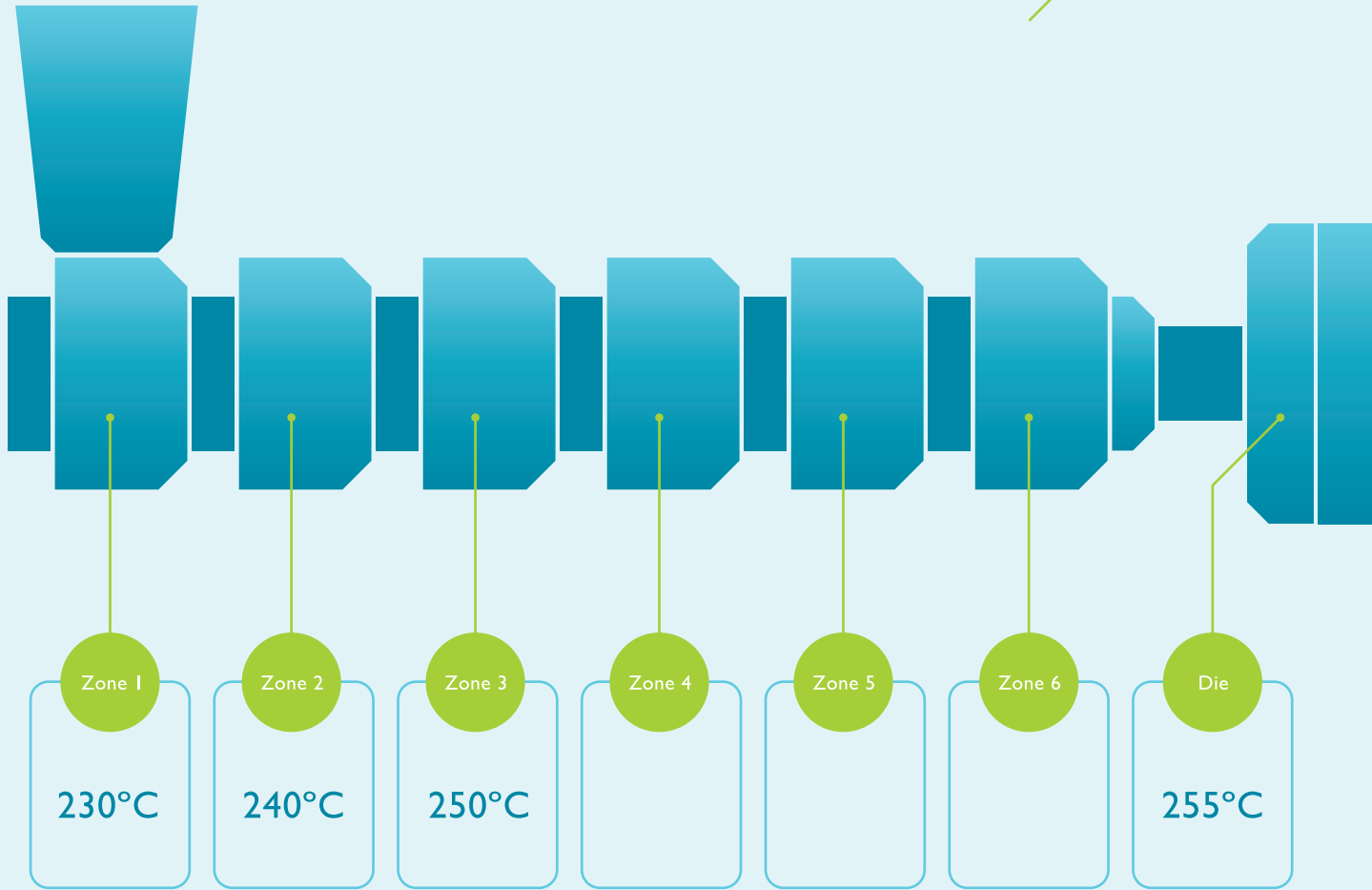


RECOMMENDED START-UP TEMPERATURE FOR INJECTION FOAMING



The above recommendation has been made using our best available knowledge; results may vary depending on the actual grades selected.
Actual parameters will depend on the machine used for molding.

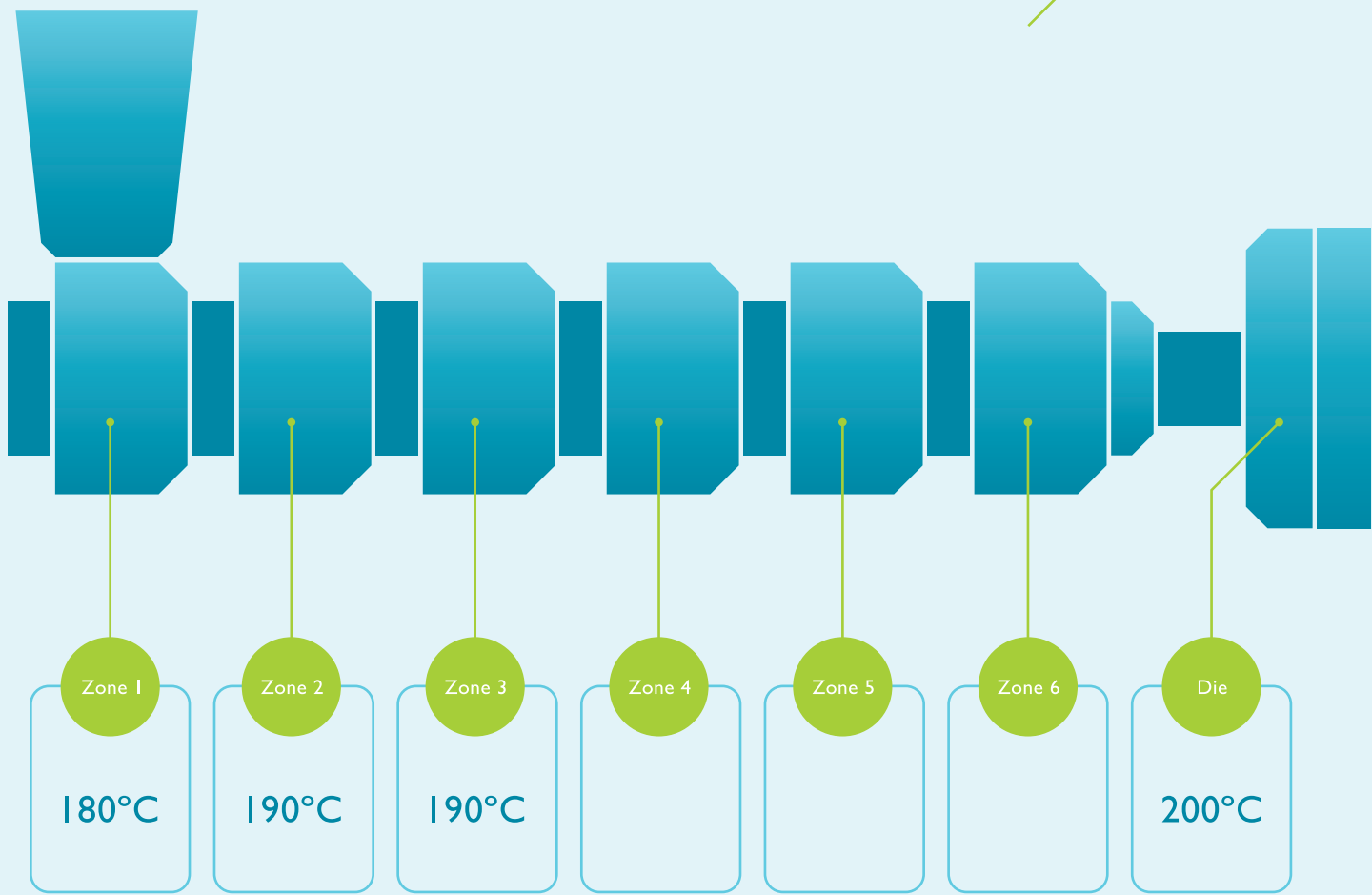
RECOMMENDED START-UP TEMPERATURE FOR OVERMOLDING FOR PA



The above recommendation has been made using our best available knowledge; results may vary depending on the actual grades selected.
Actual parameters will depend on the machine used for molding.

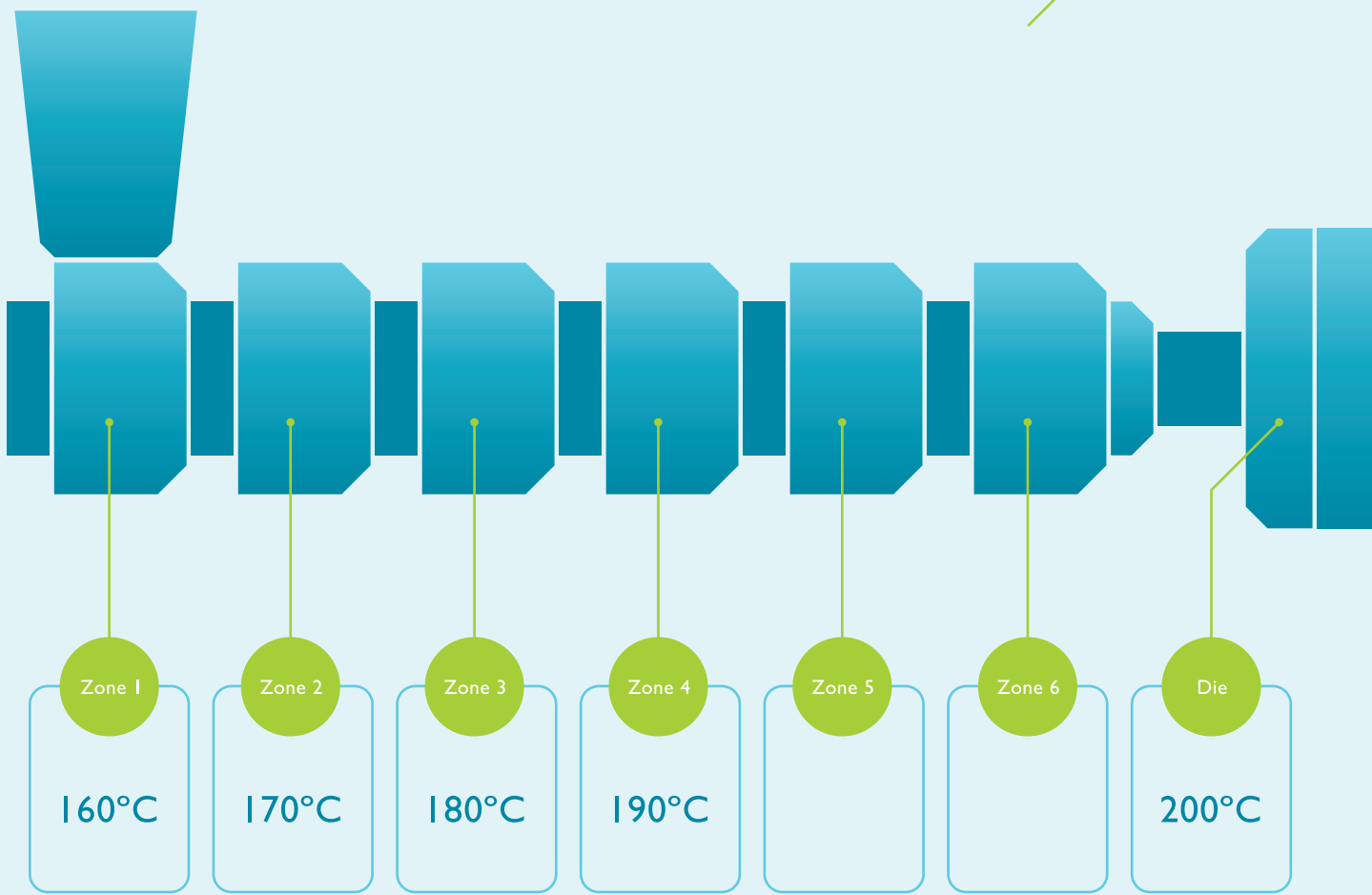


RECOMMENDED START-UP TEMPERATURE FOR OVERMOLDING FOR PP/PE/PS



The above recommendation has been made using our best available knowledge; results may vary depending on the actual grades selected.
Actual parameters will depend on the machine used for molding.

RECOMMENDED START-UP TEMPERATURE FOR GEL



The above recommendation has been made using our best available knowledge; results may vary depending on the actual grades selected.
Actual parameters will depend on the machine used for molding.



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