

### Technical Data Sheet

## SAN(Styrene Acrylonitrile)

# SAN 335T

<b>Features</b>	High transparency, Blue tint & Ice
<b>Applications</b>	Cups, Water tank for humidifier, Mixer, Juicer, Pencil case, CD case, Office applications

Physical		Test Method	Value
Density		ASTM D792	1.07 g/cm <sup>3</sup>
Melt Flow Index	(230°C, 3.8kg)	ASTM D1238	10.0 g/10min
	(200°C, 5.0kg)	ASTM D1238	3.0 g/10min
Mold Shrinkage		ASTM D955	0.2 ~ 0.6 %
Water absorption		ASTM D570	0.3 %

Mechanical		Test Method	Value
Tensile Strength		ASTM D638	710 kg/cm <sup>2</sup> (10,082) (psi)
Elongation		ASTM D638	4.5 %
Flexural Strength		ASTM D790	1,050 kg/cm <sup>2</sup> (14,910) (psi)
Flexural Modulus		ASTM D790	34,500 kg/cm <sup>2</sup> (489,900) (psi)
Izod Impact Strength(3.2mm)		ASTM D256	1.5 kgcm/cm (0.28) (ft-lb/in)
Rockwell Hardness(M scale)		ASTM D785	84

Thermal		Test Method	Value
Heat Deflection Temperature(18.6kgf/cm <sup>2</sup> )		ASTM D648	92 °C (198) (°F)
Vicat Softening Temperature(1kg, 50°C/h)		ASTM D1525	107 °C (225) (°F)

Flammability		Test Method	Value
Flame Rating - UL (1.6mm)		UL 94	HB

### Notes

These are just typical properties, not specifications. Users should confirm results by their own test.

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#### Processing guide

<b>Injection Guide</b>	<b>Unit</b>	<b>Value</b>
Nozzle	°C	190~220
Front	°C	190~210
Middle	°C	180~200
Rear	°C	170~190
Hopper Throat	°C	45
Mold	°C	40~70

  

<b>Drying</b>	<b>Unit</b>	<b>Value</b>
Temperature	°C	75~85
Time	hr	2~4

#### Notes

These are only mentioned as general guidelines.

# KUMHO SAN

(Styrene-acrylonitrile)

## 1. Product Introduction

As copolymers of styrene and acrylonitrile, Kumho SAN has excellent chemical resistance, transparency, heat resistance, processability and mechanical properties.

Kumho SAN is suitable for use in electric and electronic equipments, office applications, automobile parts, electric fans, disposable lighters and various containers.

Kumho SAN has various grades of high flow, high transparency, high heat resistance, high rigidity and high chemical resistance. Grades are classified in accordance with processing scheme, such as composition and molecular weight of styrene and acrylonitrile.

## 2. Characteristics & Applications

Grade	Characteristics	Applications
SAN 300	High flow, High strength	ABS Compounding, ABS/PC Compounding
SAN 310TR	High transparency, High strength	Hanger, Mixer, Pitcher
SAN 310CTR	High transparency, Crystal	Cosmetic container, Mixer, Transparent container
SAN 320	Super high flow	ABS Compounding, ABS/PC Compounding
SAN 326	High flow	ABS Compounding, ABS/PC Compounding
SAN 330I	High transparency, Blue ice	Sunvisor, Blower fan, Office applications like case for lead of sharp-pointed pencil
SAN 335T	High transparency, Blue tint & Ice	Cups, Water tank for humidifier, Mixer, Juicer, Pencil case, Office applications, Stereo dust cover, Cassette tape case
SAN 350	High strength	Flow-meter case, Electric & electronic parts
SAN 350HW	Super high strength	Disposable lighter, Electric fan, Electronic parts

## 3. Handling Precautions

- Keep away from fire : Styrene-acrylonitrile copolymer is flammable.
- Wear protective gear when handling. San produces toxic fumes, such as carbon monoxide, when burned or heated.
- If spilled, replace in its container, and if skin or eye contact occurs, wash off with water.
- In case of fire, wear protective gear including a gas mask, since toxic fumes, such as carbon monoxide, are produced when SAN is burned.

# KUMHO SAN

(Styrene-acrylonitrile)

## 4. Typical Properties

Properties / Unit	ASTM	Test Condition	SAN 300	SAN 310TR	SAN 310CTR	SAN 320	SAN 326	SAN 330I	SAN 335T	SAN 350	SAN 350HW
Tensile Strength [kg/cm <sup>2</sup> (psi)]	D638	23°C	740 (10,508)	700 (9,940)	620 (8,804)	630 (8,946)	690 (9,798)	705 (10,011)	710 (10,082)	780 (11,076)	810 (11,502)
Elongation [%]	D638	5mm/min	5.5	4	4	4	4.5	4.5	5	5	5
Flexural Strength [kg/cm <sup>2</sup> (psi)]	D790	23°C	950 (13,490)	950 (13,490)	900 (12,780)	700 (9,940)	950 (13,490)	855 (12,141)	1,050 (14,910)	1,050 (14,910)	1,100 (15,620)
Flexural Modulus [kg/cm <sup>2</sup> (psi)]	D790	23°C	34,500 (489,900)	34,200 (485,640)	33,600 (477,120)	34,600 (491,320)	34,500 (489,900)	34,500 (489,900)	34,500 (489,900)	35,900 (509,780)	35,200 (499,840)
Rockwell Hardness	D785	M scale	86	83	82	84	85	85	84	86	86
IZOD Impact Strength [kg.cm/cm (ft.lb/in)]	D256	3.2mm, Notched, 23°C (73°F)	1.5 (0.28)	1.5 (0.28)	1.5 (0.28)	1.5 (0.28)	1.5 (0.28)	1.5 (0.28)	1.5 (0.28)	1.5 (0.28)	1.5 (0.28)
Heat Distortion Temp [°C (°F)]	D648	18.6kgf/cm <sup>2</sup> (264psi) unannealed	92 (198)	90 (196)	90 (196)	92 (198)	91 (196)	91 (196)	92 (198)	93 (199)	94 (201)
VICAT Softening Temp [°C (°F)]	D1525	1kg	108 (226)	107 (225)	107 (225)	107 (225)	108 (226)	108 (226)	107 (225)	109 (228)	109 (228)
Melt Flow Index [g/10min]	D1238	200°C, 5kg	6	3.2	5.5	11	6	2.5	2.5	3.2	1.4
	D1238	230°C, 3.8kg	21	10	20	44	21	10	9	12	5.5
Mold Shrinkage [%]	D955	-	0.2~0.6	0.2~0.6	0.2~0.6	0.2~0.6	0.2~0.6	0.2~0.6	0.2~0.6	0.2~0.6	0.2~0.6
Specific Gravity	D792	-	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Water Absorption [%]	D570	24hr, Immersion in water	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Flammability	UL *1)	1/16" (1.6mm)	HB	HB	HB	HB	HB	HB	HB	HB	HB
Food Sanitation		FDA *2)	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable

\* 1) UL File No. E65424(CAS File No. LS66457)

\* 2) FDA and Japan food sanitation law

Note1) These are typical property values, not specifications.

Note2) In case of colored products, the values could vary slightly by color.

Note3) Values are measured at 23°C and in RH of 50% on injection molded specimens.

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