

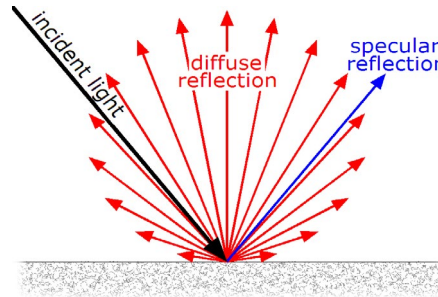
# Gloss and Distinctness of Image

## OVERVIEW

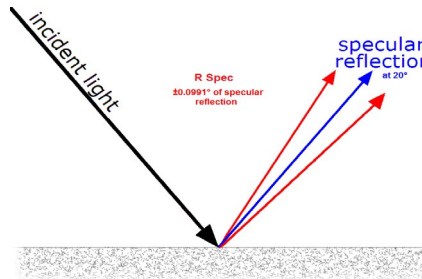
The subject of gloss is more comprehensive than how “shiny” a surface appears to the human eye. This tech brief is meant to inform and educate on the subject of gloss and the terms that can be used to describe it.

## DEFINITIONS

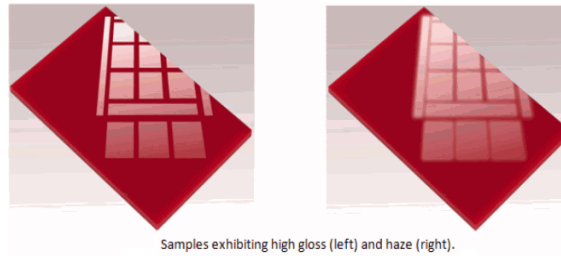
**Gloss:** an optical property that indicates how well a surface reflects light in a specular (mirror-like) direction:



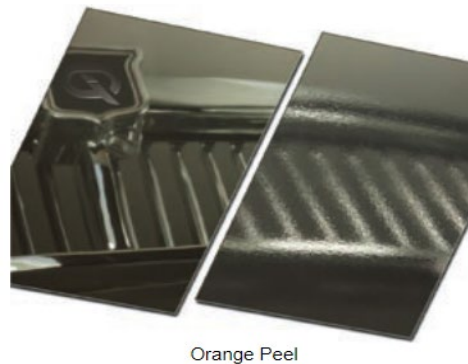
**R Spec:** Peak Specular Reflectance at  $\pm 0.0991^\circ$  around the specular angle; this is a tighter measurement of specular gloss:



**Reflectance Haze:** an optical effect caused by microscopic texture or residue on a surface:



**Distinctness of Image:** the deviation of the direction of light propagation from the regular direction by scattering during transmission or reflection; also known as orange peel:



# Gloss and Distinctness of Image

**NOTES**

- Distinctness of Image is often mistakenly referred to as Depth of Image, this can cause some confusion with regards to product selection.
- The closer the specular gloss and R spec values are to each other, the more mirror-like the surface finish.
- Lower haze and higher DOI values also contribute to a mirror-like finish.

**COMPARING SURFACE FINISHES**

	PROS	CONS
ALLEN® 2007NL with UV film	<ul style="list-style-type: none"> <li>• UV film layer helps part retain color</li> <li>• High gloss</li> </ul>	<ul style="list-style-type: none"> <li>• Lower DOI after forming versus flat sheet</li> </ul>
ALLEN® 2155HG, no film	<ul style="list-style-type: none"> <li>• High gloss</li> <li>• Low relative cost</li> </ul>	<ul style="list-style-type: none"> <li>• No UV protection</li> <li>• Increased haze after forming</li> <li>• Scratches easily</li> </ul>
ALLEN® 5160WHG	<ul style="list-style-type: none"> <li>• ASA cap layer protects from UV exposure</li> <li>• High gloss, low haze</li> <li>• Haze lower and DOI higher after forming</li> </ul>	<ul style="list-style-type: none"> <li>• Relatively higher cost than ABS</li> </ul>
ALLEN® 6000	<ul style="list-style-type: none"> <li>• Acrylic cap layer protects from UV exposure</li> <li>• High gloss, low haze</li> <li>• Surface repairability</li> </ul>	<ul style="list-style-type: none"> <li>• Higher relative cost than ASA/ABS</li> </ul>

	ALLEN® 2007NL UV		ALLEN® 2155HG		ALLEN® 5160WHG		ALLEN® 6000	
	SHEET	FORM	SHEET	FORM	SHEET	FORM	SHEET	FORM
Gloss 20°	45.5	54.7	89.3	67.4	73.8	88.2	76.8	76.1
Gloss 60°	75.4	77.3	94.9	86.7	94.6	91.7	83.8	82.9
R Spec	67.5	29.4	94.0	24.8	71.5	76.6	84.3	58.9
Haze	2.6	2.2	0.2	3.9	2.5	1.6	0	0
DOI	98.4	73.2	99.1	61.8	95.8	97.7	99.6	93.0



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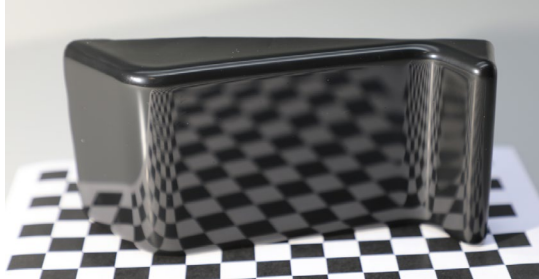
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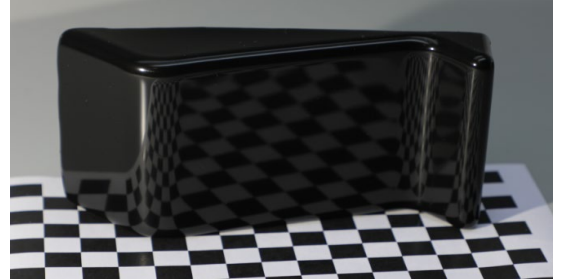
## Gloss and Distinctness of Image

### DOI EXAMPLE IMAGES AFTER THERMOFORMING

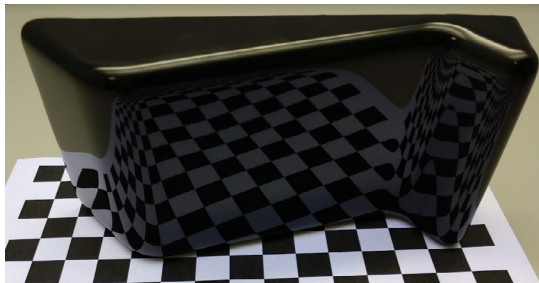
ALLEN® 2155HG:



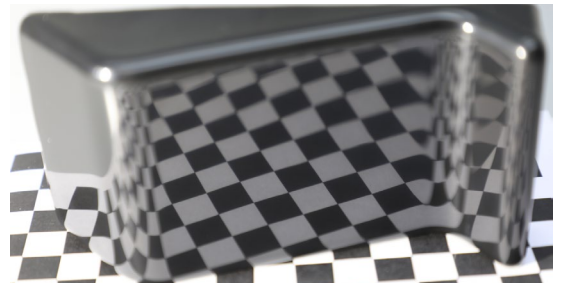
ALLEN® 2007NL with UV film:



ALLEN® 5160WHG:



ALLEN® 6000:



### CONCLUSION

The SEKISUI SPI Thermoplastics product portfolio offers a wide range of gloss and DOI options, from matte gloss, to medium gloss, to a nearly mirror finish. There are also ten embossed texture options.

High gloss can refer to a textured or smooth surface, but if high DOI is necessary, the smoothest finish possible is required. The best option for both high gloss and high DOI is the ALLEN® 6000 product line produced in smooth texture or ALLEN® 5160WHG as an alternative.



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