

KRITILEN®

Infra-Red Masterbatches

21

IR550 **IR700** **IR770** **HT555**

Technical Information

KRITILEN® Infra-Red masterbatches are used as an easy and economical way to incorporate to plastic products special Infra-Red additives that impart various useful properties.

Infra-Red masterbatches contain additives that absorb radiation emitted from the greenhouse or low tunnel during the night, thus helping to maintain higher night temperatures, reduce fuel consumption for heating, prevent frost and temperature inversion

Products and Applications

- KRITILEN® IR550 contains an effective inorganic Infra-Red absorber. Recommended addition in LDPE films is 5%-15% depending on film thickness and required "thermic effect". For LDPE/EVA co-extruded films, recommended addition is 2%-10% depending on film thickness, VA content of the film and required "thermic effect".
- KRITILEN® IR700 contains an alternative effective Infra-Red absorber. The recommended addition rate in LDPE or LDPE/EVA films is at the range of 3%-10%, depending on the film thickness, VA content of the film and required "thermic effect". It influences the film haze at a lower degree than IR550, keeping the same high transmittance.
- KRITILEN® IR770 contains the same Infra-Red absorber as KRITILEN® IR700, but at a higher concentration. Its proposed addition rate in LDPE or LDPE/EVA films is at the range of 2%-7%, depending on the film thickness, VA content of the film and required "thermic effect".
- KRITILEN® HT555 is a special IR-absorber that does not affect film clarity. For better results, it is recommended to combine it with EVA, at an addition of 3%-10%.

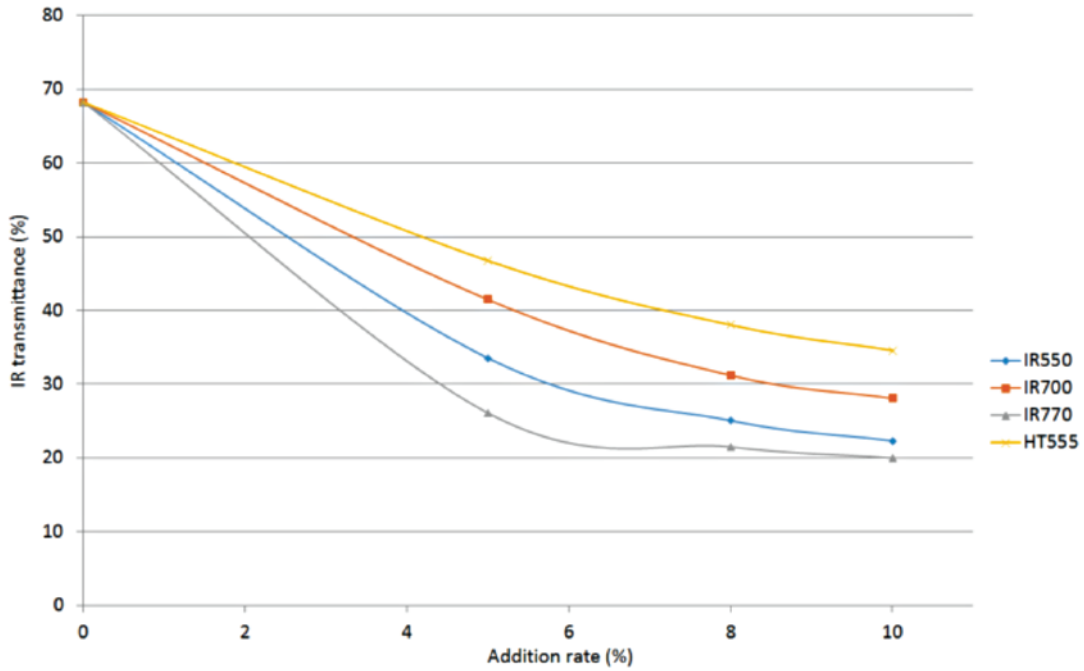
KRITILEN®	CARRIER RESIN	ADDITIVES (%)	ADDITIVE TYPE	RECOMMENDED ADDITION (%)
IR550	PE	50	Inorganic Infra-Red Absorber	5-15
IR700	PE	50	Special Inorganic Infra-Red Absorber	3-10
IR770	PE	70	Special Inorganic Infra-Red Absorber	2-7
HT 555	PE	50	Special Infra-Red Absorber	3-10

The above KRITILEN® masterbatches are offered in regular pellet form, in bags and on pallets.

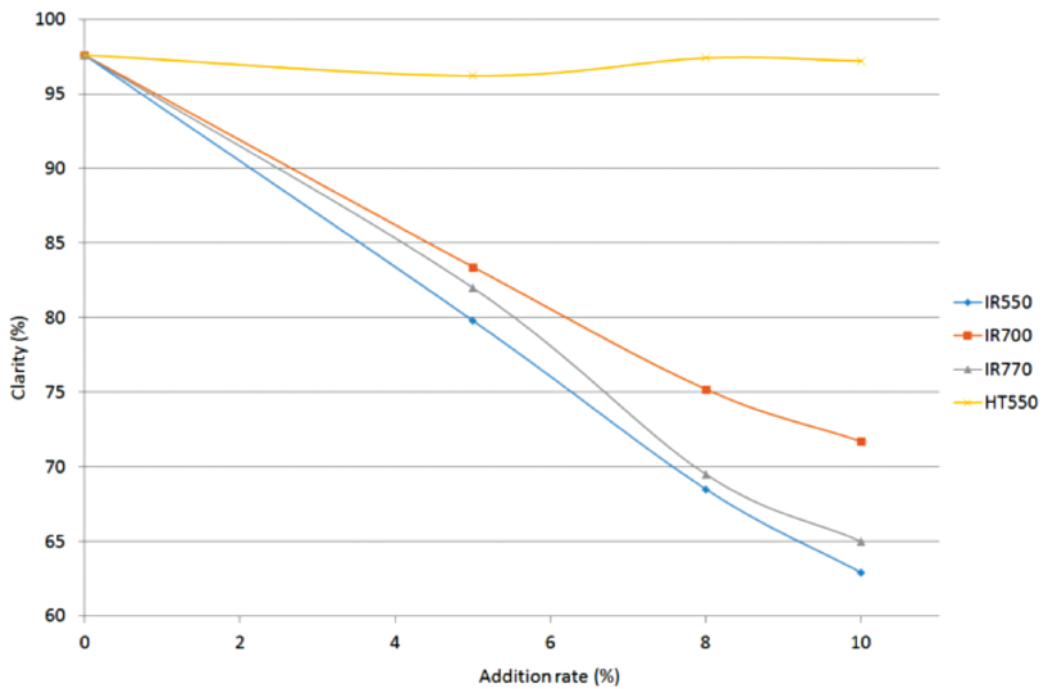
The main properties that the above KRITILEN® masterbatches impart on greenhouse films are shown in the following table:

FILM RECIPE	Film thickness (mic)	Infra-Red transmittance (%)	Clarity (%)	Transmittance (%)	Haze (%)
100% metallocene polyethylene resin (reference)		68,2	97,6	92,8	13,9
95% metallocene polyethylene resin + 5% IR550		33,5	79,8	91	32,4
92% metallocene polyethylene resin + 8% IR550		25,0	68,5	90,2	44,5
90% metallocene polyethylene resin + 10% IR550		22,3	62,9	89,3	51,1
95% metallocene polyethylene resin + 5% IR700		41,4	83,4	92,6	18,1
92% metallocene polyethylene resin + 8% IR700		31,2	75,2	92,6	25,0
90% metallocene polyethylene resin + 10% IR700	150	28,0	71,7	92,5	27,3
95% metallocene polyethylene resin + 5% IR770		26,1	82,2	92,2	25,5
92% metallocene polyethylene resin + 8% IR770		21,5	69,5	92,2	29,8
90% metallocene polyethylene resin + 10% IR770		20,0	64,7	92,3	33,5
95% metallocene polyethylene resin + 5% HT555		46,7	96,2	93	16,6
92% metallocene polyethylene resin + 8% HT555		38,0	97,4	92,9	16,7
90% metallocene polyethylene resin + 10% HT555		34,5	97,2	92,9	16,4

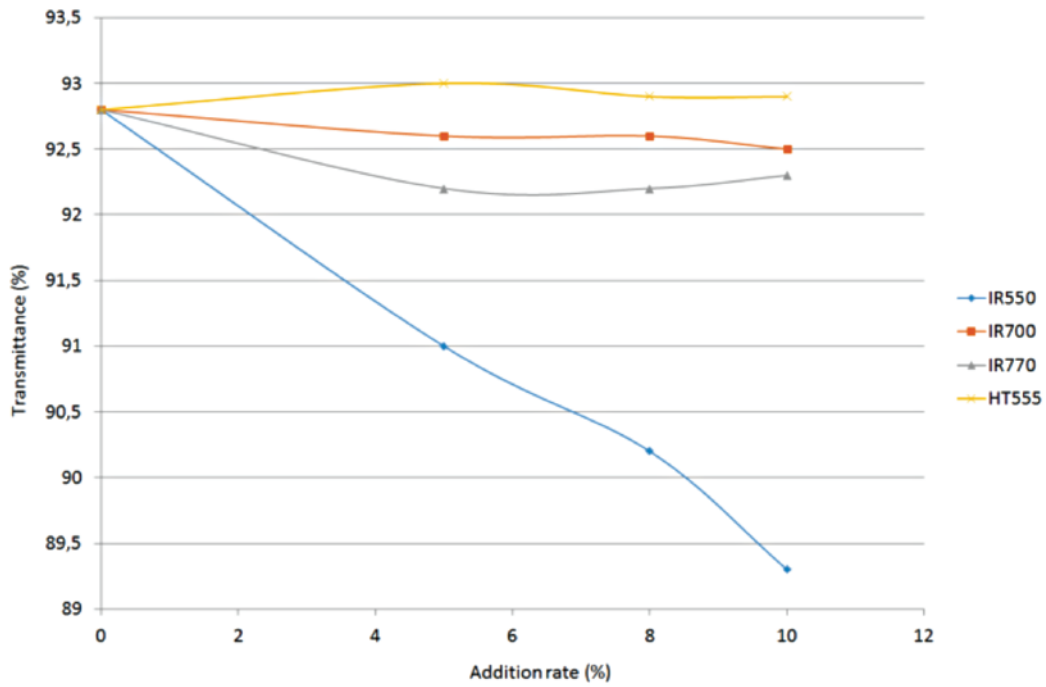
Transmittance, clarity and haze are measured according to ASTM D1003. The Infra-Red transmittance is measured according to EN 13206 (§8.9).



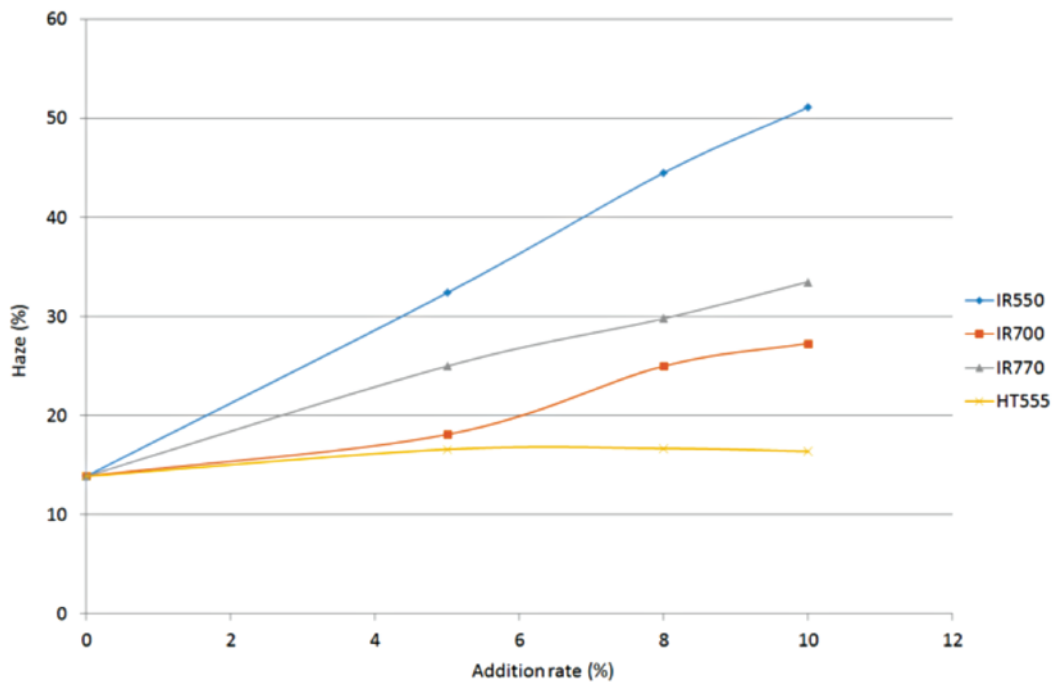
Graph 1: Infra-Red effect in relationship to the masterbatch addition rates in a 150mic film made of metallocene polyethylene resin.



Graph 2: Film clarity in relationship to the masterbatch addition rates in a 150mic film made of metallocene polyethylene resin.

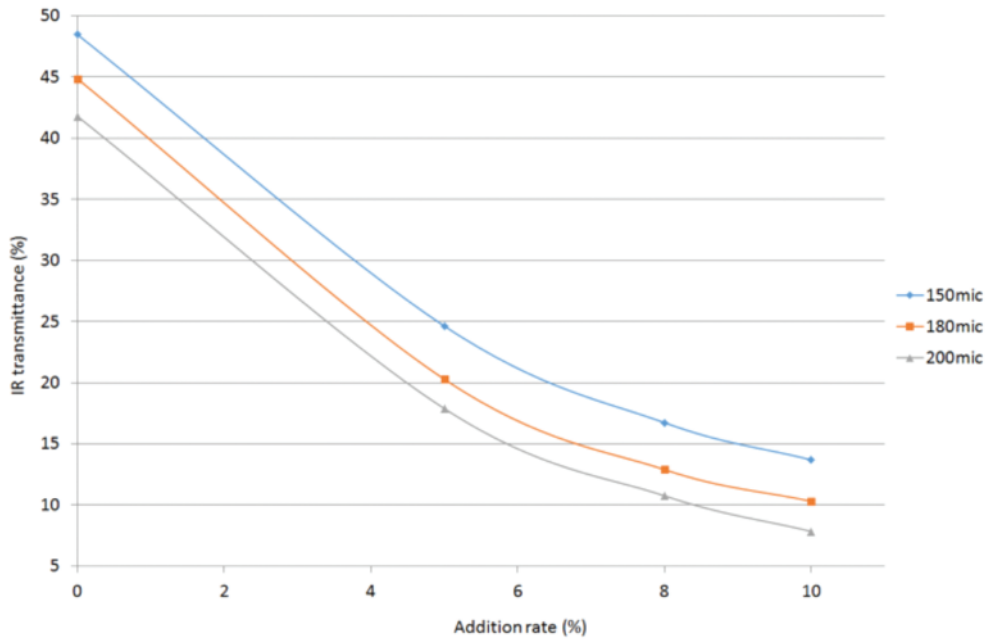


Graph 3: Transmittance in relationship to the masterbatch addition rates in a 150mic film made of metallocene polyethylene resin.

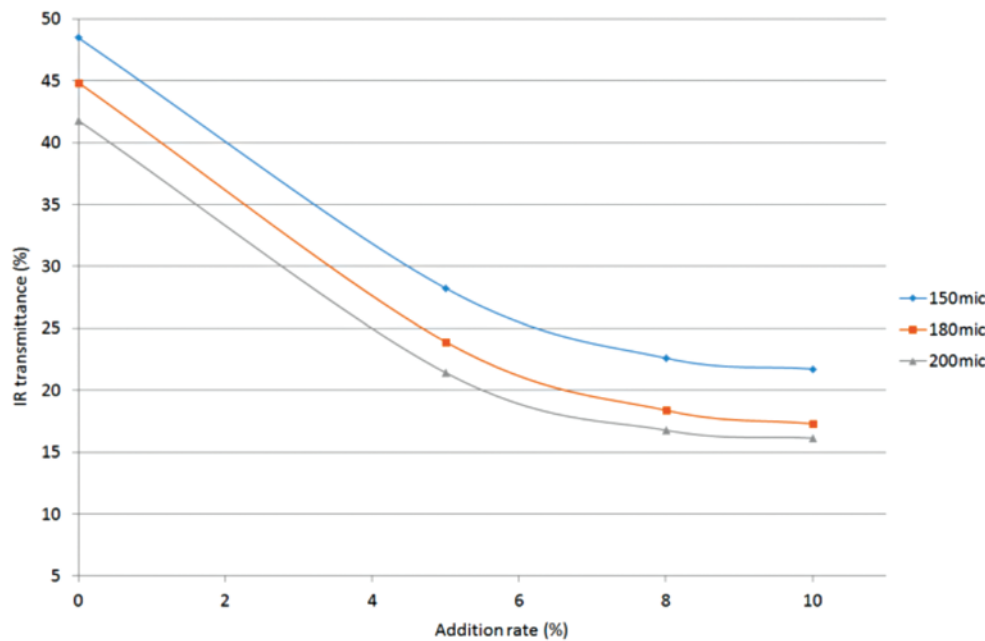


Graph 4: Haze in relationship to the masterbatch addition rates in a 150mic film made of metallocene polyethylene resin.

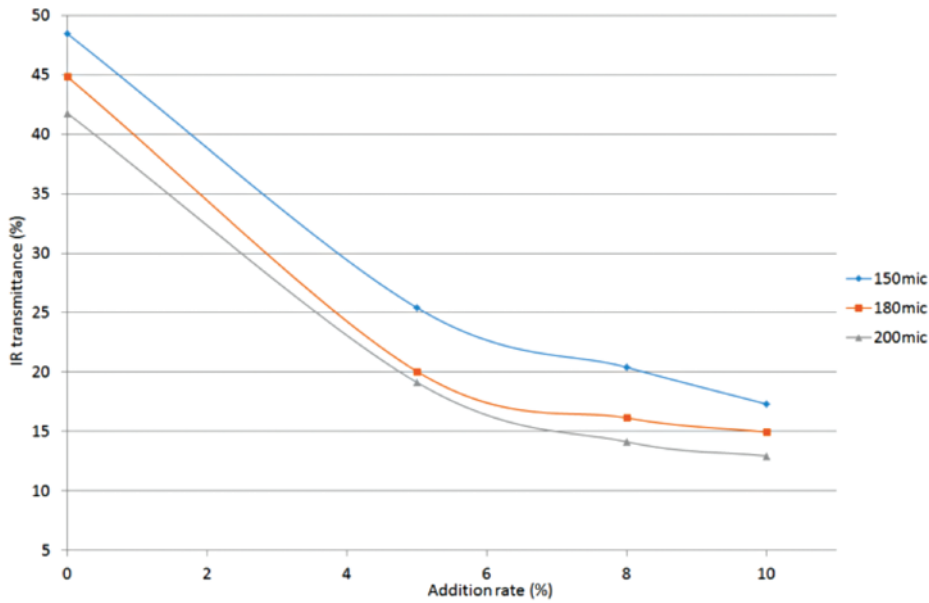
In order to have the maximum Infra-Red effect in the greenhouse film, the use of 25% EVA (with 14% VA content) is recommended in the film formulation. In such a case, the Infra-Red performance of the KRITILEN® Infra-Red masterbatches is demonstrated in the following graphs:



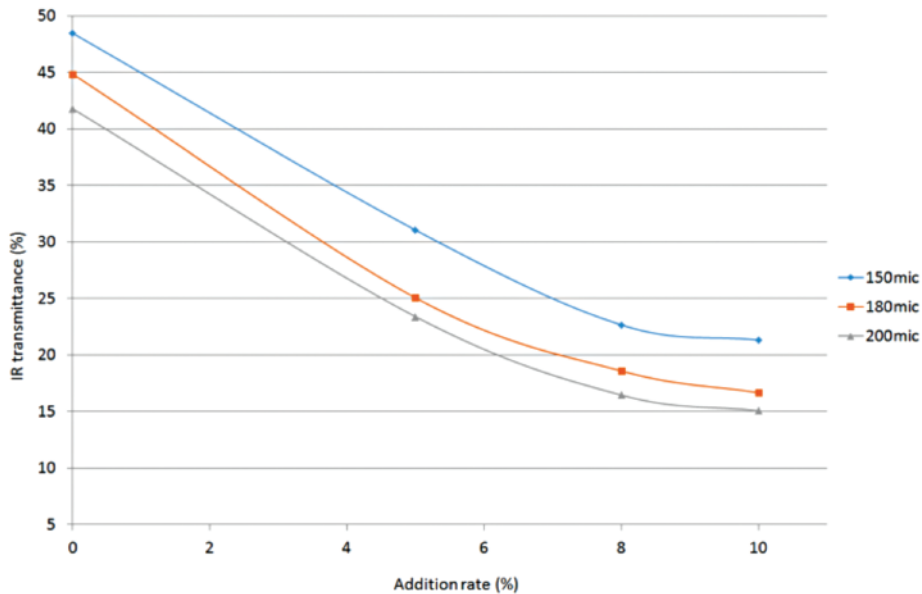
Graph 5: IR effect in relationship to the KRITILEN® IR550 addition rates in different film thicknesses (in a film made of metallocene polyethylene resin and 25% EVA - 14% VA content).



Graph 6: IR effect in relationship to the KRITILEN® IR700 addition rates in different film thicknesses (in a film made of metallocene polyethylene resin and 25% EVA - 14% VA content).



Graph 7: IR effect in relationship to the KRITILEN® IR770 addition rates in different film thicknesses (in a film made of metallocene polyethylene resin and 25% EVA - 14% VA content).



Graph 8: IR effect in relationship to the KRITILEN® HT555 addition rates in different film thicknesses (in a film made of metallocene polyethylene resin and 25% EVA - 14% VA content).

LIMIT OF LIABILITY

09/17

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