Claims

1. Method for determining whether a sealing area (13) of a primary packaging container (1) for an ophthalmic lens, for example a contact lens such as a soft contact lens (3), is unacceptable for properly sealing a foil to the sealing area (13) that completely surrounds an opening (12) of a bowl (10) of the primary packaging container (1), with the bowl (10) containing a liquid (4), the method comprising the steps of

- taking an infrared image (7) of the primary packaging container (1) using an infrared camera (6);
- determining in the infrared image (7) a plurality of individual pixels (700-709) which are arranged along an area (73) corresponding to the sealing area (13) of the primary packaging container (1), the plurality of individual pixels together covering at least 80 % of the area (73) corresponding to the sealing area (13);
- determining from the infrared image (7) the temperature (T_0, T_1, T_2) of the individual pixels (700-709), and
- determining that the sealing area (13) of the primary packaging container (1) is unacceptable for properly sealing the foil thereto in case the following conditions are fulfilled:

a) the temperature (T_1) of each individual pixel of a predetermined number of individual pixels (700, 703, 706) arranged directly adjacent to one another to form a continuous area of pixels is lower than a reference temperature (T_0), and

b) the difference between the temperature (T_1) of each individual pixel (700; 703; 706) of the predetermined number of individual pixels (700, 703, 706) arranged directly adjacent to one another to form a continuous area of pixels and the reference temperature (T_0) exceeds a predetermined threshold.

2. Method according to claim 1, further comprising the steps of

- determining from the infrared image (7) the temperature of the liquid (4) contained in the bowl (10) of the primary packaging container (1), and
- using the temperature of the liquid (4) contained in the bowl (10) of the primary packaging container (1) as the reference temperature (T_0).

3. Method according to any one of claims 1 or 2, further comprising the step of defining a plurality of individual regions of interest (70) which are arranged in a pattern along the area (73) corresponding to the sealing area (13) such that the pattern essentially covers

the area (73) corresponding to the sealing area (13), with each individual region of interest (70) of the plurality of individual regions of interest comprising a predetermined number of the plurality of individual pixels (700-709),
wherein the step of determining that the sealing area (13) of the primary packaging container (1) is unacceptable for properly sealing the foil thereto comprises
- concurrently determining in a plurality of the individual regions of interest (70) of the pattern whether conditions a) and b) are fulfilled for the predetermined number of pixels comprised by each of the plurality of individual regions of interest (70), and
- determining that the sealing area (13) of the primary packaging container (1) is unacceptable for properly sealing the foil thereto once in a predetermined number of coherent individual regions of interest (70) it has been determined that conditions a) and b) are fulfilled.

4. Method according to claim 3, wherein the predetermined number of pixels comprised by each individual region of interest (70) is nine or higher.

5. Method according to any one of the preceding claims, wherein the threshold for the difference between the temperature (T_1) of each individual pixel of the predetermined number of individual pixels (700, 703, 706) arranged directly adjacent to one another to form a continuous area of pixels and the reference temperature (T_0) is at least 1° C, in particular at least 2° C.

6. Method according to any one of the preceding claims, wherein the temperature (T_1, T_2) of the respective individual pixels as well as the reference temperature (T_0) is assigned a respective gray scale level (GS_1, GS_2, GS_0) by the infrared camera (6), the respective gray scale level (GS_1, GS_2) representing the temperature (T_1, T_2) of the respective individual pixels or the reference temperature (T_0), respectively, and wherein the sealing area (13) of the primary packaging container (1) is determined to be unacceptable for properly sealing the foil thereto in case the difference in gray scale levels between that gray scale level (GS_0) representing the reference temperature (T_0) and those gray scale levels (GS_1) representing the temperatures (T_1) of the individual pixels arranged directly adjacent to one another to form a continuous area of pixels exceeds a predetermined difference in gray scale levels representing the threshold.

7. Method according to any one of the preceding claims, further comprising the steps of
- arranging a plurality of the primary packaging containers (1) on a carrier (2);
- transporting the carrier (2) with the plurality of the primary packaging containers (1) arranged

thereon along a track (50) to a sealing area inspection station (5);
- interrupting transportation of the carrier (2) once the carrier (2) has reached the sealing area inspection station (5) where the infrared camera (6) is fixedly arranged above the track (50) and has a field of view (60) extending over the plurality of primary packaging containers (2) arranged on the carrier (2) in the sealing area inspection station (5); and
- simultaneously taking an infrared image of the plurality of primary packaging containers (1) arranged on the carrier (2) in the sealing area inspection station (5) using the fixedly arranged infrared camera (6).

8. Method according to claim 7, wherein a plurality of the said carriers (2) are arranged on a plurality of parallel running tracks (50), wherein on each individual carrier (2) of the plurality of carriers a said plurality of primary packaging containers (1) is arranged, and wherein the infrared camera (6) fixedly arranged in the sealing area inspection station (5) has a field of view (60) extending over all of the said primary packaging containers (1) arranged on all of the said carriers (2) arranged in the sealing area inspection station, the method further comprising the steps of
- transporting the individual carriers (2) of the plurality of carriers on the plurality of parallel running tracks (50) until a predetermined number of said individual carriers (2) has reached the sealing area inspection station (5) on the parallel running tracks (50), and
- simultaneously taking an infrared image of all primary packaging containers (1) arranged on all carriers (2) arranged in the sealing area inspection station using the fixedly arranged infrared camera (6).

9. Method according to any one of claims 1 to 6, further comprising the steps of
- arranging a plurality of the primary packaging containers (1) on a carrier (2);
- transporting the carrier (2) with the plurality of the primary packaging containers (1) arranged thereon along a track (50) to a sealing area inspection station (5) where the infrared camera (6) is movably arranged above the track (50);
- interrupting transportation of the carrier (2) once the carrier (2) has reached the sealing area inspection station (5);
- moving the infrared camera (6) along the carrier (2) and consecutively taking an infrared image (7) of each of the individual primary packaging containers (1) arranged on the carrier (2).

10. Method according to claim 9, wherein a plurality of the said carriers (2) are arranged on a plurality of parallel running tracks (50), wherein on each of the said carriers (2) a said plurality

of primary packaging containers (1) is arranged, and wherein a plurality of infrared cameras (6) is arranged in the sealing area inspection station (5), one said infrared camera (6) above each of the plurality of parallel running tracks (50), the method further comprising the steps of
- transporting the plurality of carriers (2) on the plurality of parallel running tracks (50) until a said carrier (2) of the plurality of carriers has reached the sealing area inspection station (5) on a said track (50) of the plurality of parallel running tracks;
- moving the respective infrared camera (6) arranged above the said track (50) along the said carrier (2) that has reached the sealing area inspection station (5) on the said track (50), and consecutively taking an infrared image (7) of each of the primary packaging containers (1) arranged on the said carrier (2).

11. Method according to any one of claims 1 to 6, further comprising the steps of
- arranging a plurality of carriers (2) on a plurality of parallel running tracks (50), each of the said carriers (2) of the plurality of carriers having a plurality of the said primary packaging containers (1) arranged thereon;
- transporting the plurality of carriers (2) with the said primary packaging containers (1) arranged thereon on the plurality of parallel running tracks (50) to a sealing area inspection station (5);
- interrupting transportation of a said carrier (2) of the plurality of carriers once the said carrier (2) has reached the sealing area inspection station (5) where at least one said infrared camera (6) is movably arranged above the plurality of parallel running tracks (50);
- once a predetermined number of said carriers (2) has reached the sealing area inspection station (5) on different ones of the plurality of parallel running tracks (50), moving the at least one infrared camera (6) in a direction (601) transverse to the parallel running tracks (50) over the primary packing containers (1) arranged on the predetermined number of said carriers (2) arranged in the sealing area inspection station (5) and consecutively taking an infrared image (7) of each of the individual primary packaging containers (1) arranged on the different carriers (2) across which the at least one infrared camera (6) is moved.