CLAIMS

What is claimed is:

1. A shot sleeve assembly for a die casting process comprising:

a housing defining a bore open at both a front end and a rear end and a pour opening for receiving molten material, the housing comprising a material of a first coefficient of thermal expansion;

a core received within the bore and extending from the front end to the rear end including a core opening aligned with the pour opening, the core comprising a material of a second coefficient of thermal expansion lower than the first coefficient of thermal expansion;

a front cover attached to the front end of the housing; and

a rear cover attached to the rear end of the housing, the rear cover forcing the core against the front cover holding the core within the bore of the housing, wherein the rear cover comprises a nut threadingly received within the bore and rotatable to force the core against the front cover to maintain a desired interface between the front end of the core and a shoulder of the font cover.

2. The shot sleeve assembly as recited in claim 1, wherein the housing includes flats for holding rotation of the housing responsive to rotation of the rear cover.

3. The shot sleeve assembly as recited in claim 1, wherein the front cover includes a shoulder against which the core abuts for holding the core within the bore.

4. The shot sleeve assembly as recited in claim 1, including a plurality of fasteners extending through the front cover for securing the front cover to the front end of the housing.

5. The shot sleeve assembly as recited in claim 1, wherein the front cover includes a plurality of threaded openings for receiving corresponding threaded fasteners for forcing the front cover from the housing.

6. The shot sleeve assembly as recited in claim 1, including a key member disposed between the housing and the core for holding a position of the core relative to the housing.

7. The shot sleeve assembly as recited in claim 1, wherein the core is fabricated from a refractory metal material.

8. The shot sleeve assembly as recited in claim 1, wherein the core is fabricated form a ceramic material.

9. A casting assembly comprising:

a mold including at least one cavity for receiving molten material;

a shot sleeve mounted to the mold for injecting molten material into the cavity, the shot sleeve including a housing defining a bore open at both a front end and a rear end and a pour opening for receiving molten material, the housing comprising a material of a first coefficient of thermal expansion, a core received within the bore and extending from the front end to the rear end including a core opening aligned with the pour opening, the core comprising a material of a second coefficient of thermal expansion lower than the first coefficient of thermal expansion, a front cover attached to the front end of the housing, and a rear cover attached to the rear end of the housing, the rear cover forcing the core against the front cover holding the core within the bore of the housing, wherein the rear cover comprises a nut threadingly received within the bore and rotatable to force the core against the front cover to maintain a desired interface between the front end of the core and a shoulder of the font cover; and

a plunger movable through the bore of the shot sleeve for forcing molten material through the core and into the at least one cavity.

10. The casting assembly as recited in claim 9, wherein the front cover includes a shoulder against which the core abuts for holding the core within the bore.

11. The casting assembly as recited in claim 9, including a key member disposed between the housing and the core for holding a position of the core relative to the housing.

CLAIMS

What is claimed is:

1. A shot sleeve assembly for a die casting process comprising:

a housing defining a bore open at both a front end and a rear end and a pour opening for receiving molten material, the housing comprising a material of a first coefficient of thermal expansion;

a core received within the bore and extending from the front end to the rear end including a core opening aligned with the pour opening, the core comprising a material of a second coefficient of thermal expansion lower than the first coefficient of thermal expansion;

a front cover attached to the front end of the housing; and

a rear cover attached to the rear end of the housing, the rear cover forcing the core against the front cover holding the core within the bore of the housing, wherein the rear cover comprises a nut threadingly received within the bore and rotatable to force the core against the front cover to maintain a desired interface between the front end of the core and a shoulder of the font cover.

2. The shot sleeve assembly as recited in claim 1, wherein the housing includes flats for holding rotation of the housing responsive to rotation of the rear cover.

3. The shot sleeve assembly as recited in claim 2, wherein the front cover includes a shoulder against which the core abuts for holding the core within the bore.

4. The shot sleeve assembly as recited in claim 3, including a plurality of fasteners extending through the front cover for securing the front cover to the front end of the housing.

5. The shot sleeve assembly as recited in claim 4, wherein the front cover includes a plurality of threaded openings for receiving corresponding threaded fasteners for forcing the front cover from the housing.

6. The shot sleeve assembly as recited in claim 5, including a key member disposed between the housing and the core for holding a position of the core relative to the housing.

7. The shot sleeve assembly as recited in claim 6, wherein the core is fabricated from a refractory metal material.

8. The shot sleeve assembly as recited in claim 7, wherein the core is fabricated form a ceramic material.

9. A casting assembly comprising:

a mold including at least one cavity for receiving molten material;

a shot sleeve mounted to the mold for injecting molten material into the cavity, the shot sleeve including a housing defining a bore open at both a front end and a rear end and a pour opening for receiving molten material, the housing comprising a material of a first coefficient of thermal expansion, a core received within the bore and extending from the front end to the rear end including a core opening aligned with the pour opening, the core comprising a material of a second coefficient of thermal expansion lower than the first coefficient of thermal expansion, a front cover attached to the front end of the housing, and a rear cover attached to the rear end of the housing, the rear cover forcing the core against the front cover holding the core within the bore of the housing, wherein the rear cover comprises a nut threadingly received within the bore and rotatable to force the core against the front cover to maintain a desired interface between the front end of the core and a shoulder of the font cover; and

a plunger movable through the bore of the shot sleeve for forcing molten material through the core and into the at least one cavity.

10. The casting assembly as recited in claim 9, wherein the front cover includes a shoulder against which the core abuts for holding the core within the bore.

11. The casting assembly as recited in claim 10, including a key member disposed between the housing and the core for holding a position of the core relative to the housing.