

Refrigerant R152a Burning Velocity Verification Test Records

Test Apparatus Information:

Name: ISO 817 Test Apparatus; Model No.: EFS-20;
 Manufacturer: MOTIS FIRE TECHNOLOGY CO LTD

Sample Gas Information:

Name: Refrigerant R152a; Content: C2H4F2; Purity: >99.9%;
 Manufacturer: Jinan Bangneng New Material Technology Co., Ltd.

Test Method:

Refrigerants — Designation and safety classification Annex C Method of test for burning velocity measurement of flammable gases.

Test Results:

Con.%	No.	S _s in the Tube (cm/s)	a _f /A _F	S _u (cm/s)
6%	#1	42.6	0.46	19.596
	#2	43.1	0.45	19.395
7%	#1	50.2	0.47	23.594
	#2	49.7	0.48	23.856
7.5%	#1	51.8	0.48	24.864
	#2	52.7	0.44	23.188
8%	#1	52.3	0.46	24.058
	#2	51.1	0.47	24.017
	#3	52.5	0.47	24.675
	#4	51.7	0.47	24.299
8.5%	#1	51.3	0.44	22.572
	#2	52	0.43	22.36
9%	#1	47.2	0.43	20.296
	#2	45.7	0.43	19.651
10%	#1	37.8	0.46	17.388
	#2	37	0.39	14.43
10.5%	#1	33.2	0.36	11.952
	#2	31.7	0.35	11.095

Max. Concentration of the S_u: 7.5%.

Max. Burning Velocity: 24.8 cm/s.

Notes:

S_s is the flame propagation velocity in the test tube.

A_f is the cross-sectional area of the flame base.

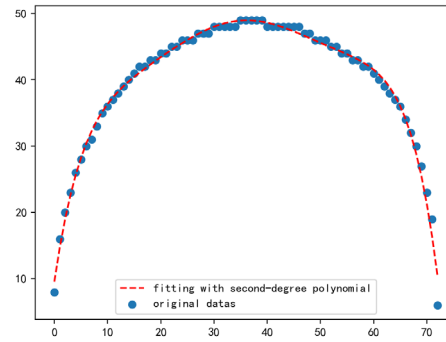
A_f is the flame surface area.

S_u is the burning velocity, $S_u = S_s \times \frac{a_f}{A_f}$.

Image at Max. Su Test



Captured Image



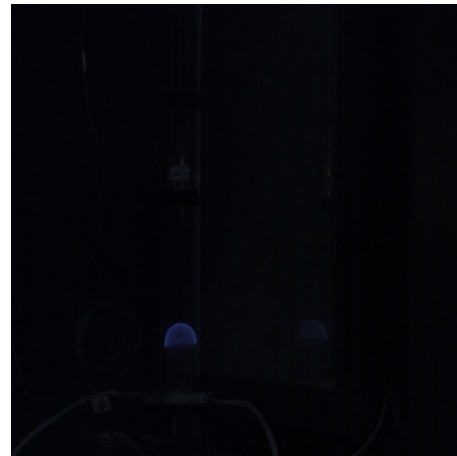
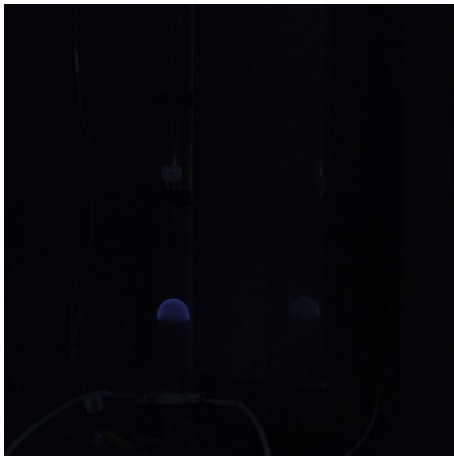
Fitting Curve

Conclusion:

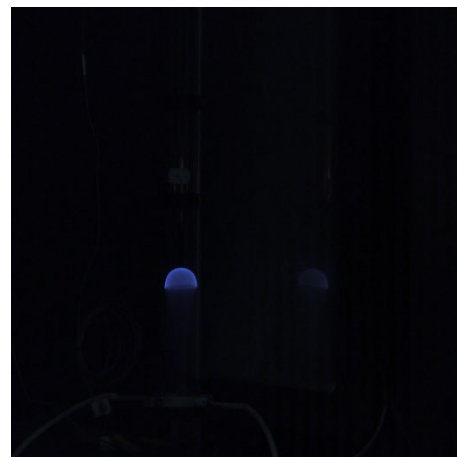
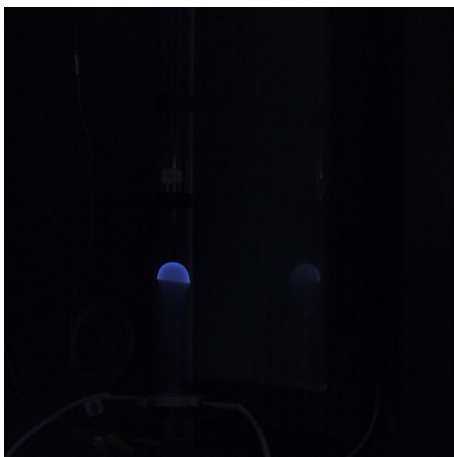
In reference to ISO 817 Clause 6.3.1.1, the burning velocity tested according to Annex C, the burning velocity for R152a is $S_u (23.0 \pm 2.3 \text{ cm/s})$. The above results **comply** with the ISO 817 nominal $S_u (23.0 \pm 2.3 \text{ cm/s})$ of R152.

Attachments Captured Images During Tests

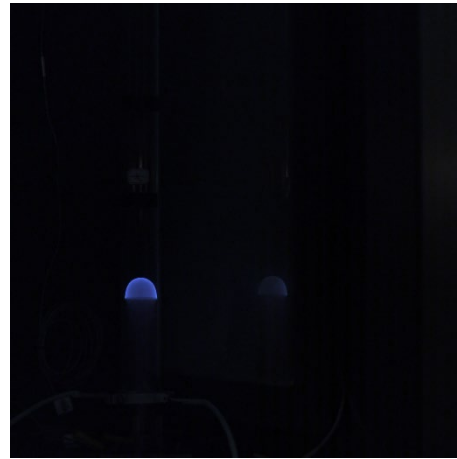
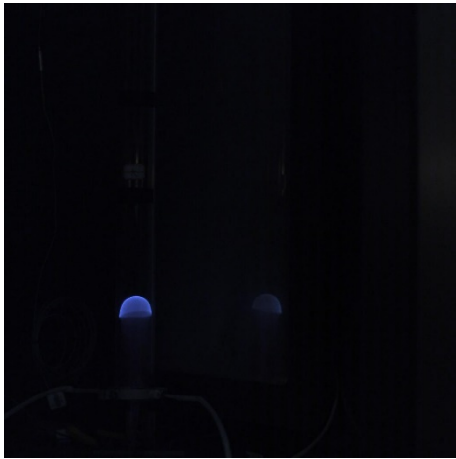
1) Concentration at 6.0%



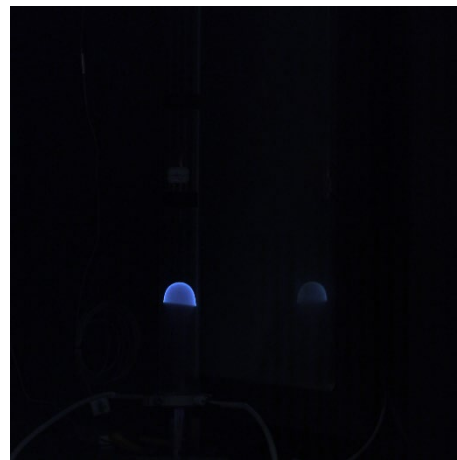
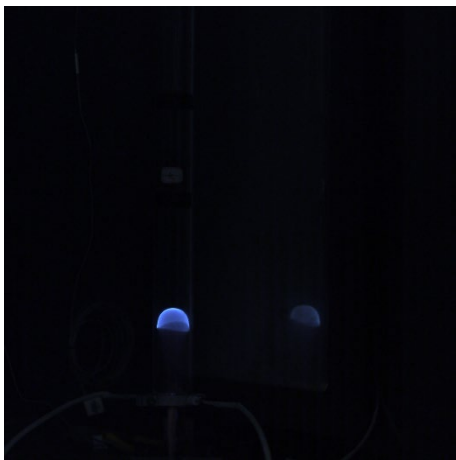
2) Concentration at 7.0%



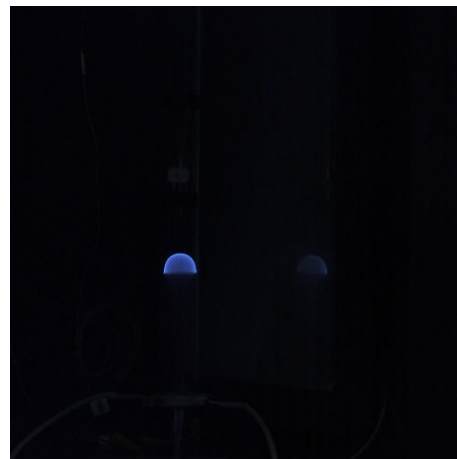
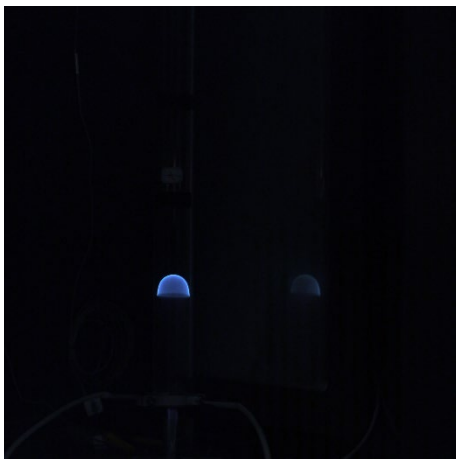
3) Concentration at 7.5%



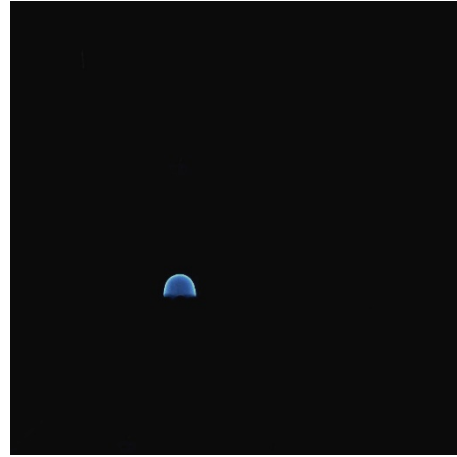
4) Concentration at 8.0%



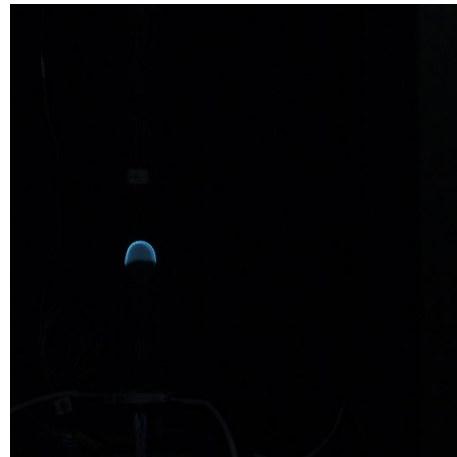
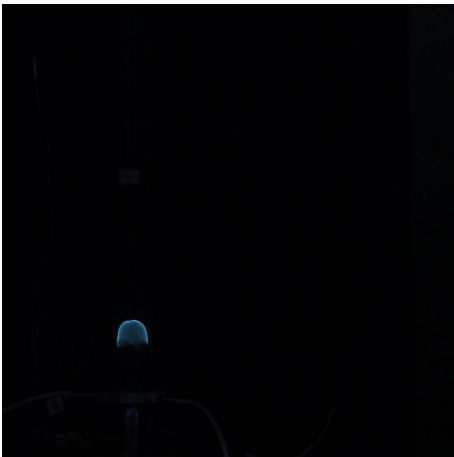
5) Concentration at 8.5%



6) Concentration at 9.0%



7) Concentration at 10.0%



8) Concentration at 10.5%

