

## CASE STUDY 27

### HIQUENCH ISX 17: USE OF LOW VISCOSITY FAST QUENCHING OIL FOR BETTER HARDNESS AND LOW DISTORTION IN SMALL SCREWS ( FASTENERS)



#### CUSTOMER DETAILS :

A leading white goods manufacturing industry having all manufacturing facilities for component manufacturing. They have one fastener plant for refrigerator where they have continuous furnace for heat treatment of screws.



#### OBJECTIVES FOR CONDUCTING THE TRIAL

- Need to achieve required hardness
- No distortion/ cracking desired. The screw size is small.



#### OPERATING / APPLICATION DETAILS:

- Machine: Continuous mesh belt furnace of Make: CHII CHYUAN HEAT TREATMENT INDUSTRIAL CO. LTD, China
- Tank Capacity: 8000 Ltrs
- Part: Screws (8.8mm/ 10.3mm)
- Material: 10B21 and SCM 435
- Hardening Temp: 900°C

- Core Hardness: 280HV- 350HV
- Case Hardness: 350HV to 450HV
- Tempering Temp: 200-400°C
- Present Product: K-11

**PRODUCT RECOMMENDED: HIQUENCH ISX 17**



#### TRIAL WAS CONDUCTED AT DR. CASTLE LAB

Trial Criteria

Quenchant	HIQUENCH ISX 17	No of Screws taken	4 Pcs
Quenchant Temp.	60° C	Protective atmosphere	Nitrogen
Hardening Temp	900° C	Agitation	210 RPM
Agitation	210 RPM	Soaking Time	20 Min

Trial results:  
As-quench Hardness achieved

Spot No.	Sample 1	Sample 2	Sample 3	Sample 4
01	471	462	468	479
02	479	457	470	472
03	480	459	469	471
04	477	469	472	477
05	475	469	471	487

Magnification : 400X  
Microstructure Description: Microstructure shows untempered martensite  
No distortion/ cracking is observed

## RESULTS



**Conclusion:**

- Quench hardness is on the higher side of the specification
- HIQUENCH ISX 17 is suitable for screws.



**Customer's decision:**

Customer was satisfied and placed the order